

# PREVENTING CHILD DEATHS IN MISSOURI

## THE MISSOURI CHILD FATALITY REVIEW PROGRAM

### ANNUAL REPORT FOR 2015



**Missouri Department of Social Services  
State Technical Assistance Team**

**PO Box 208**

**Jefferson City, Missouri 65102-0208**

**(800) 487-1626**

**(573) 751-5980**

**<http://www.dss.mo.gov/stat/mcfrp.htm>**

**Published December 2016**

---



**Jeremiah W. (Jay) Nixon, Governor**  
State of Missouri

**Brian Kinkade, Director**  
Missouri Department of Social Services

## CHILD FATALITY REVIEW PROGRAM STATE PANEL (2015)

According to RSMo 210.195, "The Director of the Department of Social Services shall appoint a state child fatality review panel, which shall meet biannually to provide oversight and make recommendations to the Department of Social Services, State Technical Assistance Team." In this oversight role, the panel is encouraged to identify systemic problems and bring concerns to the attention of the State Technical Assistance Team. The composition of the state panel mirrors that of the county panels; each multidisciplinary profession is represented by a recognized leader in the respective discipline.

### Chairperson

**Harold Bengsch**  
Greene County Commissioner  
Springfield

### Prosecuting Attorneys

**Catherine Vannier**  
Missouri Office of Prosecution  
Services  
Jefferson City

### Kathi Alizadeh

St. Louis County Prosecutors  
Office  
Clayton

### Coroner

**Kathleen Little**  
Clinton County  
Cameron

### Medical Examiner

**Mary Case, M.D.**  
St. Louis, St. Charles,  
Franklin and Jefferson  
Counties  
St. Louis

### Keith Norton, M.D.

Southwest Missouri Forensics  
Nixa

### Law Enforcement

**Sgt. Matthew Redmond**  
St. Louis County Police  
St. Louis

### Chief Bill Carson

Maryland Heights Police  
Maryland Heights

### Lt. Col. Sandra Karsten

Missouri State Highway Patrol  
Jefferson City

### Public Health Service

**Douglas Beal, M.D. MSHA, CMI-  
V, CFP, DABP, DABFE, DABFM**  
Forensic Pediatrician  
Columbia

### Terra Frazier, D.O.

Child Abuse Pediatrician  
Children's Mercy Hospital & Clinics  
Kansas City

### Patricia Schnitzer, Ph.D., RN

University of Missouri  
Columbia

### Sharmini Rogers, MBBS, MPH, Chief

Bureau of Genetics and Healthy  
Childhood  
Missouri Department of Health and  
Senior Services  
Jefferson City

### Children's Division

**Tim Decker, Director**  
Missouri Department of Social  
Services  
Jefferson City

### John Steinmeyer

Jefferson City

### Juvenile Office

**Tammy Walden**  
Missouri 26th Judicial Circuit  
Camdenton

### Emergency Medical Services

**Virginia Wilson**  
Missouri University Health System  
Columbia

### Optional Members

**Kirk Schreiber**  
Missouri Children's Trust Fund  
Jefferson City

### Kelly Schultz

Missouri Office of Child Advocacy  
Jefferson City

### Joel Anderson

Missouri Division of Legal  
Services  
Jefferson City

## TABLE OF CONTENTS

Missouri Child Fatality Review Program.....	1
State Technical Assistance Team and Child Fatality Review Program .....	2
Missouri Child Fatalities .....	3
Summary of Findings, Missouri Incident Fatalities 2015.....	5
Autopsies.....	7
Natural Fatalities (Other than SIDS).....	8
Sudden Infant Death Syndrome .....	12
Unintentional Injury Fatalities .....	16
Unintentional Suffocation .....	17
Unintentional Motor Vehicle Fatalities.....	20
Driver and Passenger Fatalities .....	23
Pedestrian Fatalities .....	24
Bicycle-Related Fatalities.....	25
All-Terrain Vehicle Fatalities .....	25
Unintentional Fire/Burn Fatalities .....	28
Unintentional Drownings .....	31
Unintentional Poisonings.....	34
Unintentional Firearm Fatalities.....	36
Homicides.....	39
Fatal Child Abuse and Neglect .....	40
Fatal Child Abuse: Inflicted Injury.....	42
Fatal Child Neglect: Inadequate Care and Grossly Negligent Treatment .....	45
Other Homicides .....	47
Suicides .....	49
Undetermined Injury .....	52
Undetermined Cause and Manner .....	54
The Practical Application of Child Death Review: Prevention of Child Fatalities .....	55
Prevention Findings: The Final Report.....	56
Process for Child Fatality Reviews .....	58
Missouri Incident Child Fatalities by Age, Sex and Race .....	59
Missouri Incident Child Fatalities by County .....	60

## DEDICATION

This report reflects the work of many dedicated professionals throughout the State of Missouri. Through better understanding of how and why children die, we strive to improve and protect the lives of Missouri's youngest citizens. We will always remember that each number represents a precious life lost. We dedicate this report to these children and their families.

# MISSOURI CHILD FATALITY REVIEW PROGRAM

Death rates for infants, children and teens are widely recognized as valuable measures of child wellbeing; however, it is the accuracy of key factors associated with child deaths that provides the basis for identifying vulnerable children, and responding in ways that protect and improve their lives. Over 25 years of research has proven that prevention or significant reductions of child abuse and neglect fatalities, as well as other serious and fatal injuries, cannot be achieved without more complete information about how and why children are dying. Without such thorough information, many child abuse and neglect deaths would go under-reported and/or misclassified. It is nationally recognized that a system of comprehensive child death review panels has made a major difference.

In 1991, Missouri initiated the first comprehensive statewide child fatality review system in the nation, designed to produce an accurate picture of each child death, as well as a database providing ongoing surveillance of all childhood fatalities. While the program has evolved and adapted to meet new challenges, the objectives have remained the same. The program identifies potentially fatal risks to infants and children, and responds with multi-level prevention strategies. The ongoing success of the program is due in large part to the support of county-based panel members, administrators and other child protection professionals who volunteer for this difficult work, which is a true expression of advocacy for children and families in our state.

Missouri legislation requires that every county in our state (including the City of St. Louis) maintain a multidisciplinary panel, at a minimum comprised of a coroner/medical examiner, law enforcement, Juvenile/Family Court, emergency medical services, prosecutor, public health and the Children's Division, to examine the deaths of all children under the age of 18. If the death meets program criteria, it is referred to the county's multidisciplinary Child Fatality Review Program (CFRP) panel. Optional members may be added at the discretion of the panel. **The panels do not act as an investigative body.** Their purpose is to enhance the knowledge base of the mandated investigators; evaluate and address potential need for services; identify and implement prevention interventions for the family and community; and enhance multidisciplinary communications and coordination.

Of the average 1,000 child deaths annually in Missouri, approximately 40% merit review. To come under review, at the time of death, the cause must be unclear, unexplained, or of a suspicious circumstance, to include all injury, homicide or suicide deaths. All sudden, unexplained deaths of infants, one week to one year of age, are specifically required to be reviewed by the CFRP panel. (This is the only age group for which an autopsy is mandatory by state statute.)

Statistical data on all child deaths is collected by means of the Internet-based National Center for the Review and Prevention of Child Deaths (NCRPCD) Child Death Reporting (CDR) Case Reporting System. The system allows for multi-state local and state users to further enhance knowledge and identification of trends, spikes and pattern of risks, leading to improved investigations, provision of community-based services and implementation of prevention best practices on the local, state and national level.



# STATE TECHNICAL ASSISTANCE TEAM AND CHILD FATALITY REVIEW PROGRAM

## Missouri State Statutes

- ✿ Section 210.150 and 210.152 (Confidentiality and Reporting of Child Fatalities)
- ✿ Section 210.192 and 210.194 (Child Fatality Review Panels)
- ✿ Section 210.195 (State Technical Assistance Team - duties)
- ✿ Section 210.196 (Child Death Pathologists)
- ✿ Section 211.321; 219.061 (Accessibility of juvenile records for child fatality review)
- ✿ Section 194.117 (Sudden Infant Death; infant autopsies)
- ✿ Section 58.452 and 58.722 (Coroner/Medical Examiners responsibilities regarding child fatality review)

## Confidentiality Issues (RSMo 210.192 to 210.196)

Proper CFRP review of a child death requires a thorough examination of all relevant data, including historical information concerning the deceased child and his/her family. Much of this information is protected from disclosure by law, especially medical and child abuse/neglect information; **therefore, CFRP panel meetings are always closed to the public and cannot be lawfully conducted unless the public is excluded.**

Each CFRP member should confine his or her public statements only to the fact that the panel met and that each panel member was charged to implement their own statutory mandates. **Under no circumstances, should any other specific information about the case or CFRP panel discussions be disclosed outside of the review.** All CFRP panel members who are asked to make a public statement should refer such inquiries to the CFRP panel spokesperson. Failure to observe this procedure may impede an investigation and/or violate Children's Division regulations, as well as other state and federal confidentiality statutes that contain penalties.

Individual disciplines (coroner/medical examiners, law enforcement agencies, prosecuting attorneys, etc.) can still make public statements consistent with their individual agency's participation in an investigation, as long as they do not refer to the specific details discussed at the CFRP panel meeting, which could violate other agencies' state statutes. No CFRP panel member is prohibited from making public statements about the general purpose, nature or effects of the CFRP process. Panel members should also be aware that the legislation which established the CFRP panels provides official immunity to all panel participants to work together on a child fatality.

## Mandated Activities for CFRP Panels

- ✿ Every county must have a multidisciplinary CFRP panel (114 counties and City of St. Louis).
- ✿ The county CFRP panel must consist of at least the following seven core members: prosecuting attorney, coroner/medical examiner, law enforcement representative, Children's Division representative, public health representative, juvenile officer and emergency services representative. Panels may elect to have additional optional members on either a permanent or situational basis.

- ✿ All deaths, ages birth through 17, must be reported to the coroner/medical examiner.
- ✿ By state statute, all children, age one week to one year, who die in a *sudden, unexplained* manner, are mandated to have an autopsy.
- ✿ The State CFRP panel must meet at least twice per year to review the program's progress and identify systemic needs and problems.
- ✿ CFRP panels must use uniform protocols and the NCRPCD Internet-based Case Reporting System for data collection.
- ✿ Child autopsies must be performed by certified child-death pathologists.
- ✿ Knowingly violating reporting requirements is a Class A misdemeanor.
- ✿ When a child's death meets the criteria for review as defined by *CFRP Protocols and Procedures*, activation of the CFRP panel must occur within 24 hours of the child's death, with a meeting scheduled as soon as practical. A majority of core panel disciplines is required to be present (four or more member disciplines).

## Missouri Child Fatalities

**Missouri Child Fatalities** refers to all children under age 18, who died in Missouri, without regard to the state of residence or the state in which the illness, injury or event occurred. (For example, a child who is a resident of Kentucky, injured in a motor vehicle crash in Illinois and is brought to a Missouri hospital, where he subsequently dies, would be considered as a "Missouri Child Fatality.") All illness, injury and events occurring within federal military installations, although located in Missouri, are handled the same as out-of-state incidents. Statistical data would be reported to the CDR Case Reporting System, but such deaths would be deemed non-reviewable, as the installations and other states have their own child fatality review processes.

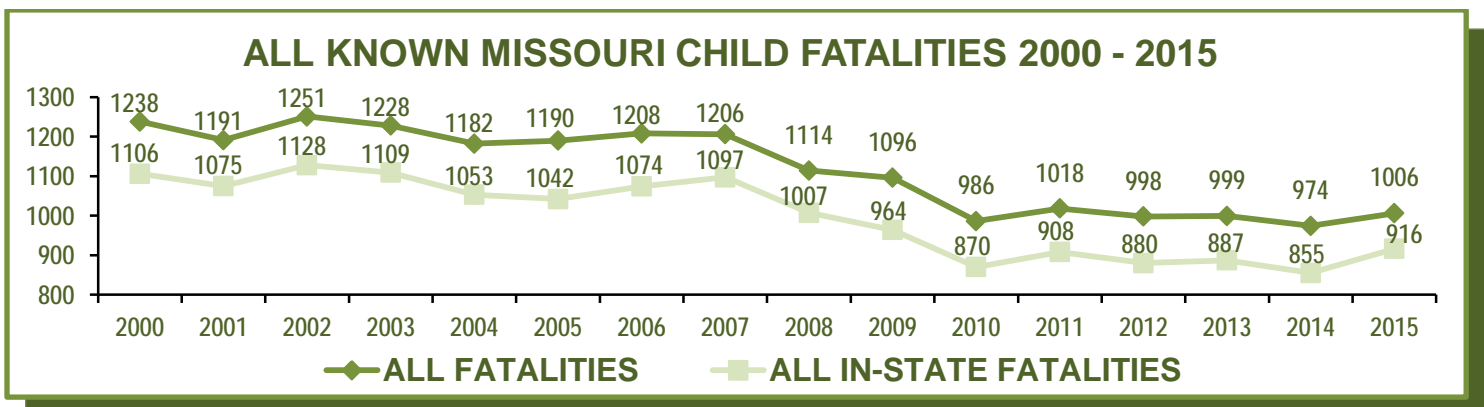
**Missouri Incident Fatality** refers to a fatal illness, injury or event, which occurs within the State of Missouri. If the death meets the criteria for panel review, it is reviewed in the county in which the fatal injury, illness or event occurred.

**Multiple-Cause Deaths:** *Cause of death* is a disease, abnormality, or injury that contributed directly or indirectly to the death; however, a death often results from the combined effect of two or more conditions. Because the Child Fatality Review Program is focused on the prevention of child fatalities, the precipitating events are of particular concern. Therefore, deaths are categorized according to the circumstances, which may not be the immediate cause of death listed on the death certificate. (An example would be a child passenger in a car that runs off the road and lands in a ditch full of water; the "immediate cause of death" is listed on the death certificate as "drowning," but the precipitating event was a motor vehicle crash.)

- ✿ Every Missouri incident child fatality is required to be initially reviewed by the coroner/medical examiner and the county CFRP panel chairperson to determine if death meets program criteria for review. The findings of this initial review are reported on the NCRPCD CDR Case Reporting System.



- All child deaths that are unclear, unexplained, or of a suspicious circumstance (which includes all injury events, homicides, suicides, medical nonfeasance and sudden unexpected deaths of infants one week to one year of age) are required to be reviewed by the county-based multidisciplinary CFRP panel. Upon completion of the panel review, the NCRPCD CDR Case Reporting System is reviewed, making any necessary corrections and/or additions, and all sections of the record are completed as appropriate.
- In-house CFRP data management links data collected on the NCRPCD CDR Case Reporting System, with the Department of Health and Senior Services (DHSS) Bureau of Vital Records birth and death data. Every attempt is made to reconcile the two systems; however, in some cases, crucial data components are incomplete and are noted, as appropriate.
- All deaths included in the CFRP Annual Report occurred in calendar year 2015, although some cases may not have been brought to county panel review until 2016. In a small number of cases, panels did not complete all of the information requested on the NCRPCD CDR Case Reporting System.
- Eighty-nine** Missouri child fatalities were due to events that occurred in either other states or on federal installations in Missouri. Although documented in the NCRPCD CDR Case Reporting System, these deaths are not considered Missouri Incident Fatalities and are not otherwise addressed in this report.
- Of the **416** Missouri Incident Fatalities with indication for review as reported in NCRPCD CDR Case Reporting System, **32** either did not receive required CFRP panel review, and/or panel findings were not entered. These fatalities are included in this 2015 CFRP Annual Report, because the data, though incomplete, is useful and accurate within the limitations of the information provided.
- Ten** Missouri Incident Fatalities reported to the CFRP by death certificates from the Department of Health and Senior Services, were neither initially entered into the CDR Case Reporting System; nor, if applicable, received required CFRP panel review and panel findings entered. From information provided by the death certificates, **two** of those 10 fatalities (20%) had at least one indicator for review (both vehicular). Because we do not have sufficient information on these deaths, these fatalities are **not** included in the data for this annual report.
- The data for this report comes from the CDR Case Reporting System information submitted by the county-based CFRP panels. Compliance for reporting overall Missouri Incident Fatalities is 99% and county child fatality reviews is 92%. Please be aware that our report does not reflect the actual total number of Missouri Child Fatalities and Missouri Incident Fatalities, only those reported. Below is a chart showing the number of known child deaths, taken from all available sources, in Missouri from 2000 to 2015.

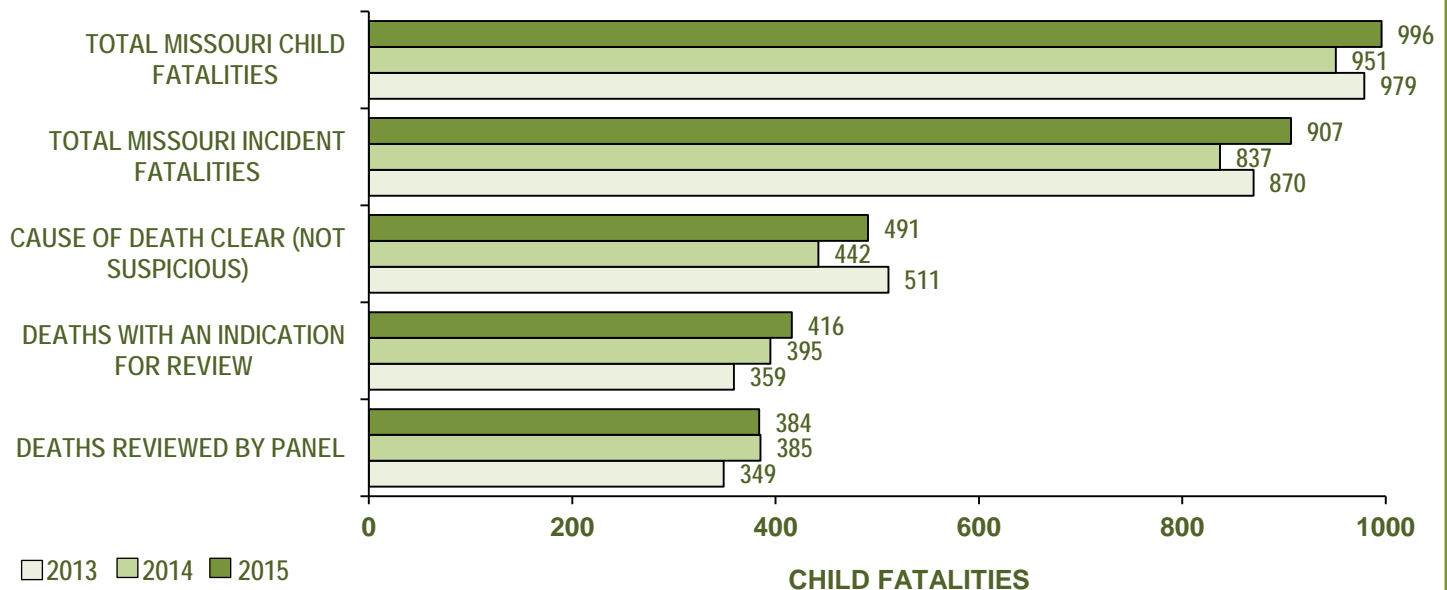




## SUMMARY OF FINDINGS

In 2015, CFRP received information on **996** children age 17 and under who died in Missouri. **Eighty-nine** deaths were due to events out of state or on federal installations. The remaining **907** deaths were determined to be Missouri Incident Fatalities and therefore subject to initial review by the coroner or medical examiner and county CFRP chairperson, with **491** (54%) determined to have not met criteria for a detailed panel review. The remaining **416** (46%) had indicators for review and of those, **384** (92%) were reviewed by the county panels.

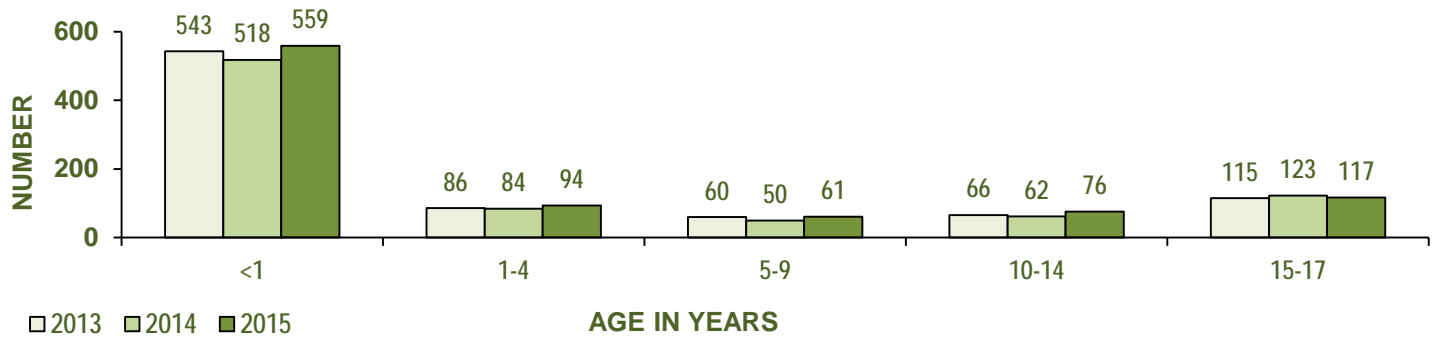
### MISSOURI CHILD FATALITIES VS. MISSOURI INCIDENT FATALITIES



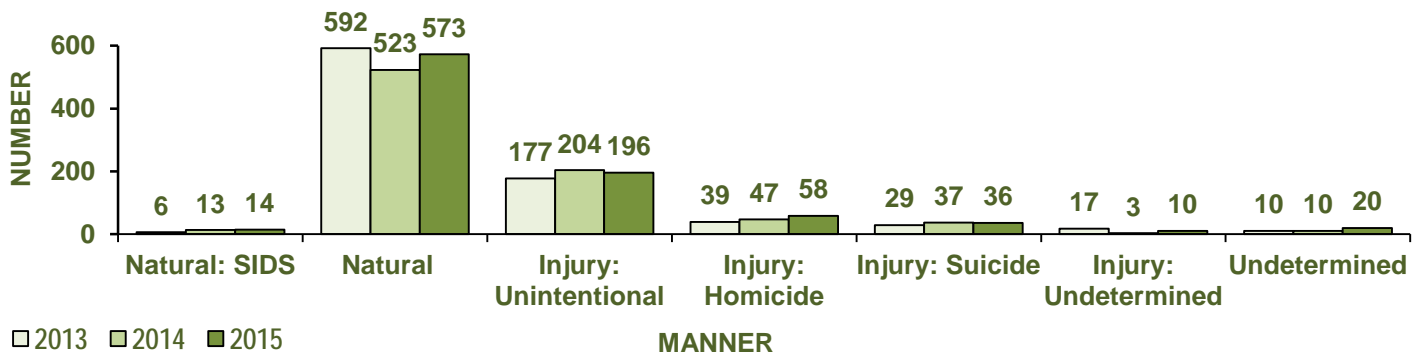
### MISSOURI INCIDENT FATALITIES BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	365	341	367	White	600	583	625
Male	505	496	540	Black	232	230	237
				Hawaiian	1	0	0
				American Indian	0	1	1
				Pacific Islander	0	0	1
				Asian	12	5	15
				Multi-Racial	25	18	28
	870	837	907		870	837	907

## MISSOURI INCIDENT FATALITIES BY AGE

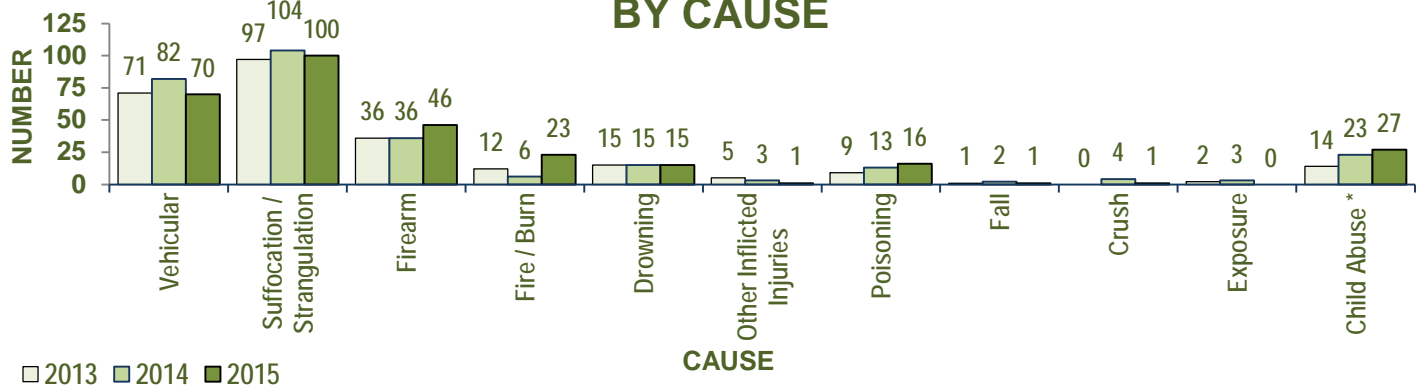


## MISSOURI INCIDENT FATALITIES BY MANNER



Missouri Death Certificates identify deaths by Manner and Cause. *Manners of Death* are defined as Natural, Accidental, Homicide, Suicide, Could Not Be Determined and Pending Investigation. For CFRP purposes, Sudden Infant Death Syndrome (SIDS) deaths are identified separately from other types of Natural deaths, as these deaths are of particular program interest; Accident, Suicide and Homicide are separated out by type of injury; Intentional, Unintentional and Undetermined; Could Not Be Determined classified as Undetermined; and Pending Investigation is excluded as what is gained from the review process will assist in determining the appropriate manner of death. The *Cause of Death*, on the other hand, is the actual mechanism by which the death occurred; i.e., firearm, vehicular, poisoning, suffocation, etc.

## MISSOURI INCIDENT INJURY FATALITIES BY CAUSE



\*Child abuse deaths can include deaths from casual categories of Firearm, Poisoning, Other Inflicted Injury, Suffocation / Strangulation, Exposure and Vehicular.

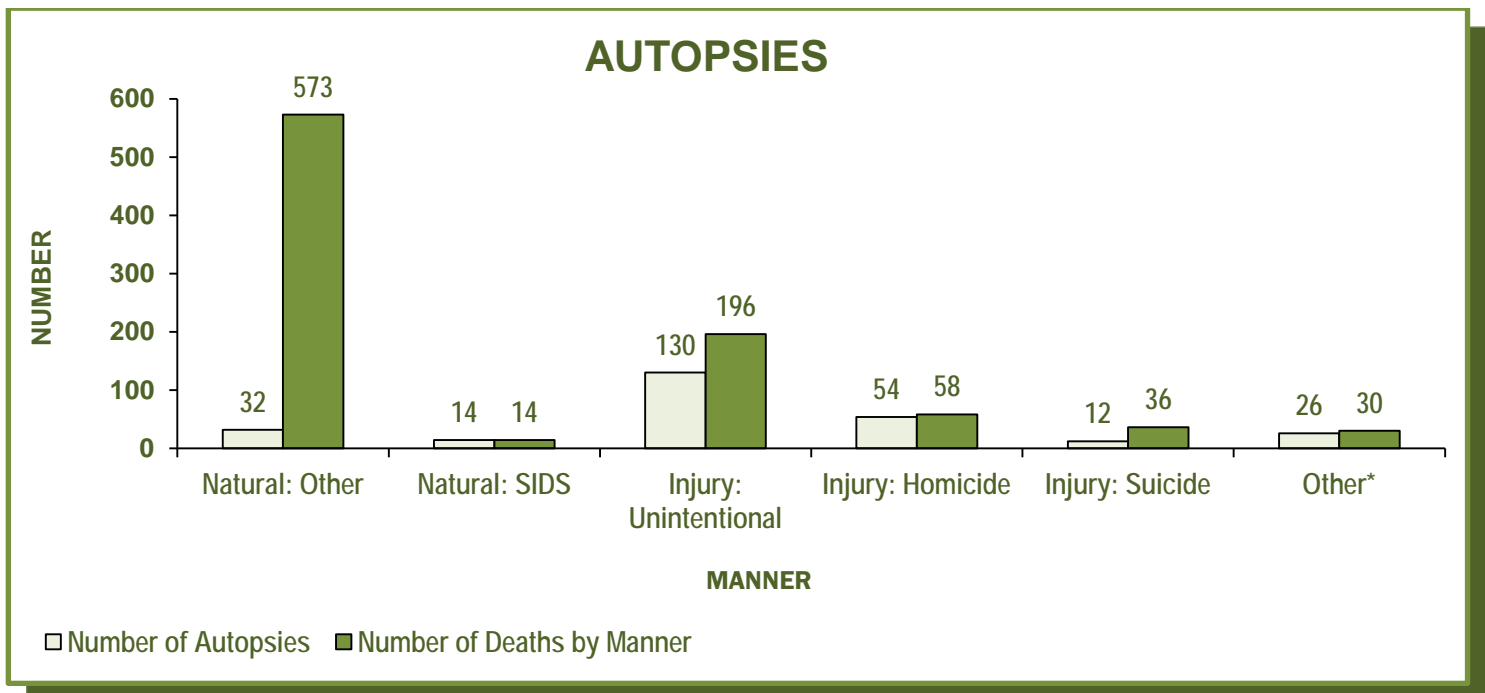
While Manner and Cause of Death are separate, it is the combination of the two that defines how the death occurred. For example, a child died from a firearm injury, but knowing if the injury was unintentional, intentional or undetermined allows for a better understanding of how the child died. Most CFRP panel findings coincide with the Death Certificate Manner of Death, but there may be instances where they do not. This can occur when other factors gleaned from the review process were not readily available at the time the death certificate was completed; i.e., the death certificate may indicate SIDS as the cause of death, but from panel concerns related to unsafe bedding and/or sleep surface sharing, they might complete the data collection as the death being from Suffocation/Strangulation or even Undetermined. Panel findings may also result in getting the official manner of death amended.

Just as SIDS deaths are separated from natural cause, intentional injury deaths that are determined to be child abuse are also separated out from other intentional injury deaths. For example, if a child receives a fatal intentional inflicted burn from a person who has care, custody and/or control of the child, the death would only be addressed in the Child Abuse section. In deaths where the panel felt that serious neglect may have contributed to, but did not cause the death, it will be only noted as Fatal Child Neglect in this section, but the death will still be counted in the appropriate manner and causal categories.

## AUTOPSIES

Missouri state statute, RSMo. 194-117, requires that an autopsy be performed for all children from one week to one year of age, who die “suddenly when in apparent good health.” The need for all other child autopsies are based upon the circumstances surrounding the death, and determined by coroners and medical examiners in consultation with their local Certified Child Death Pathologist.

Missouri’s Certified Child Death Pathologist Network ensures autopsies performed on children, birth through age 17, are performed by professionals with expertise in forensic pediatrics. A listing of network members can be obtained at <http://www.dss.mo.gov/stat/cpn.htm>.



\*Other, includes those deaths that are either Injury of Undetermined Intent, or Manner and Cause are Undetermined.

## NATURAL FATALITIES (OTHER THAN SIDS)

**In 2015, Natural Fatalities were responsible for the deaths of 573 Missouri children, representing 63% of all Missouri Incident Fatalities.**

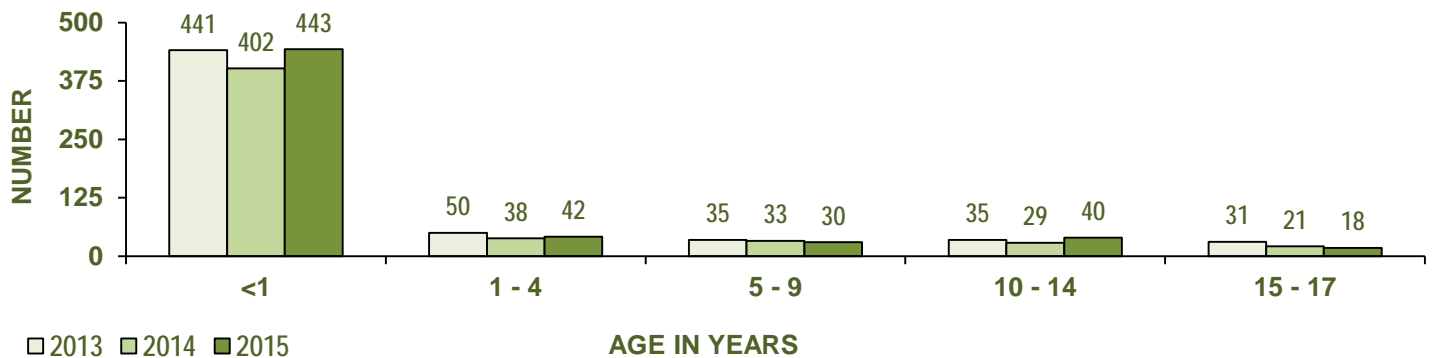
- ☼ Prematurity is the cause of 43% of all illness / natural deaths.
- ☼ Sixty-one percent of the babies who died from premature birth were white, 33% were black and 6% were other.
- ☼ The average gestational age of premature births was 22.7 weeks and the average weight was 529 grams or 1 lb. 3 oz.
- ☼ Sixty-five percent of the premature children died within one day of birth.
- ☼ The age of the mothers of premature babies range from 15 to 51 years.

Most child deaths are from natural causes. Natural deaths include illnesses, prematurity, congenital anomalies, cardiac conditions, cancer, infection and other medical conditions. The majority of natural deaths occurs within the first year of life and are often related to prematurity or congenital anomalies. Although SIDS is considered a natural death of undetermined cause, Natural - SIDS deaths will be specifically addressed in a separate section.

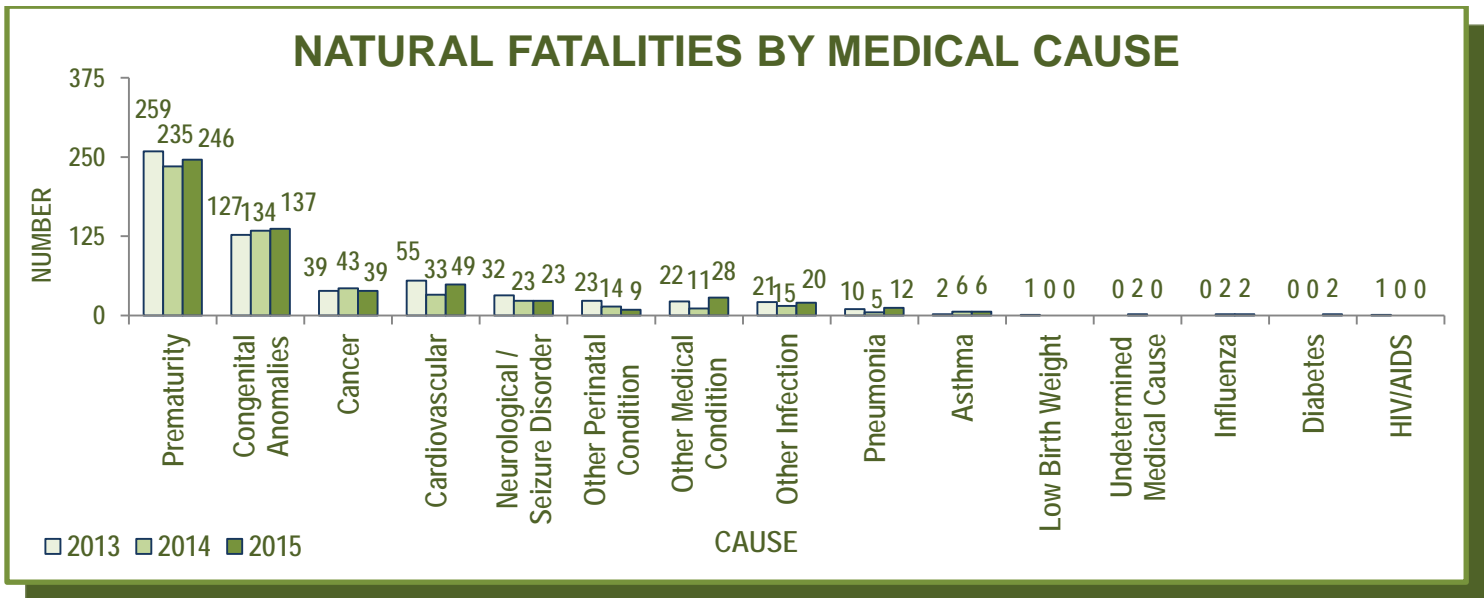
### NATURAL FATALITIES BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	262	240	245	White	407	363	385
Male	330	283	328	Black	160	145	157
				Asian	11	4	11
				American Indian	0	0	1
				Multi-Racial	14	11	19
	592	523	573		592	523	573

### NATURAL FATALITIES BY AGE



Children die from a variety of medical conditions, but premature birth is the leading cause. Of the **573** natural deaths, **246** (43%) were from premature birth.



The statistics do not necessarily reflect how many children were born with fatal congenital defects, since such defects can fall under the cardiovascular or neurological/seizure disorder medical conditions. Even with the breakout of these medical conditions, congenital anomalies are by far the second largest reason for natural deaths in the state.

## Infant Mortality

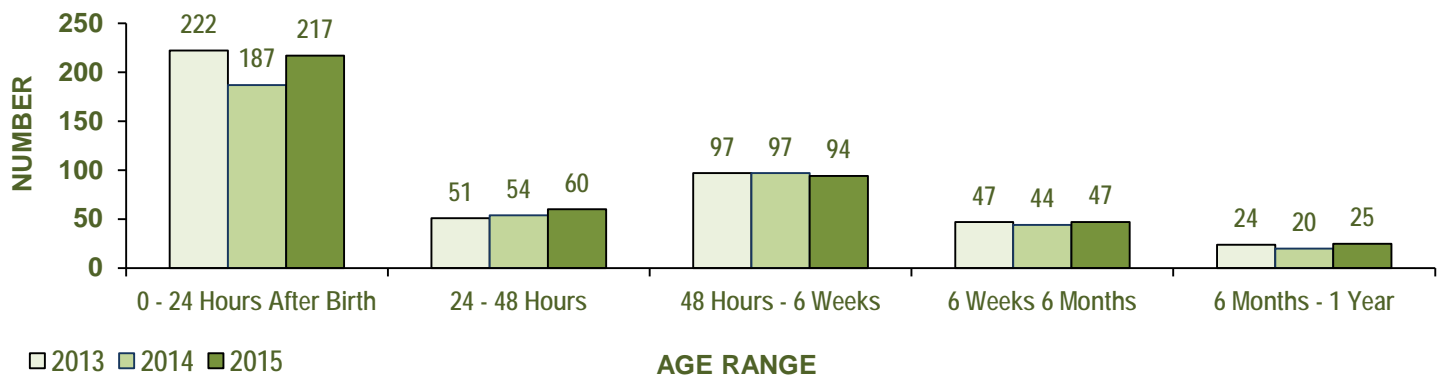
Prematurity is also the leading cause of death in the first month of life and those that survive could potentially face lifelong serious health issues. Preterm birth rates have been dropping since 2006, with the largest decrease seen in the late-preterm births (34 to 37 weeks gestation). Babies born late-preterm, have a death rate three times higher than babies born at full term. By reducing the number of children born prematurely, even by just a few weeks, could save many infant lives. For 2015, the Center for Disease Control and Prevention (CDC) reports that the preterm rate is down to 9.8% of all births. Missouri's 2015 rate is on par with the national average at 9.6%.

In Missouri, overall the infant mortality rate increased from 6.1 to 6.5 deaths per 1000 live births, which is higher than the national rate of 5.96 deaths per 1000 live births.



Infants less than one year of age comprise the majority of natural cause deaths at **443** (77%). Of the **277** deaths that occurred within the first 48 hours, **217** (78%) occurred within 24 hours after birth.

### NATURAL FATALITIES <1 YEAR BY AGE

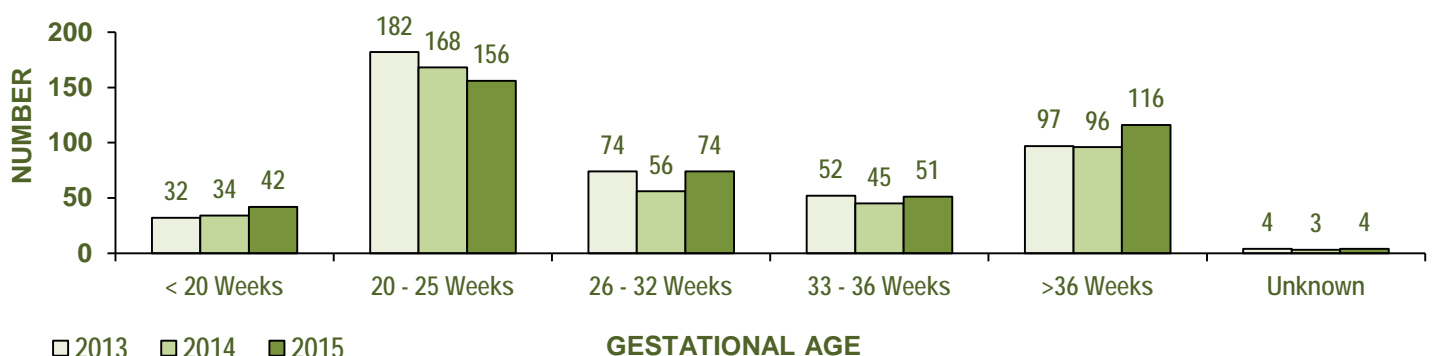


### NATURAL FATALITIES <1 YEAR BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	201	185	193	White	292	278	293
Male	240	217	250	Black	126	113	125
				Asian	10	2	8
				Multi-Racial	13	9	17
	441	402	443		441	402	443

Infants can be classified as premature for two different reasons: they can be born “preterm” because of a “curtailed gestation (gestational age of <37 completed weeks)”; or they can be “premature by virtue of birth weight (2,500 grams or less at birth)”. Children in the second category are referred to as “Low Birth Weight” or LBW children. This differentiation is made because while the two can be linked, there are other factors besides prematurity which can result in a low birth weight pregnancy. In 2015, **323** infants were reported to be born preterm, while **318** low weight births were reported during that same period.

### NATURAL FATALITIES AGE <1 YEAR BY GESTATIONAL AGE AT BIRTH

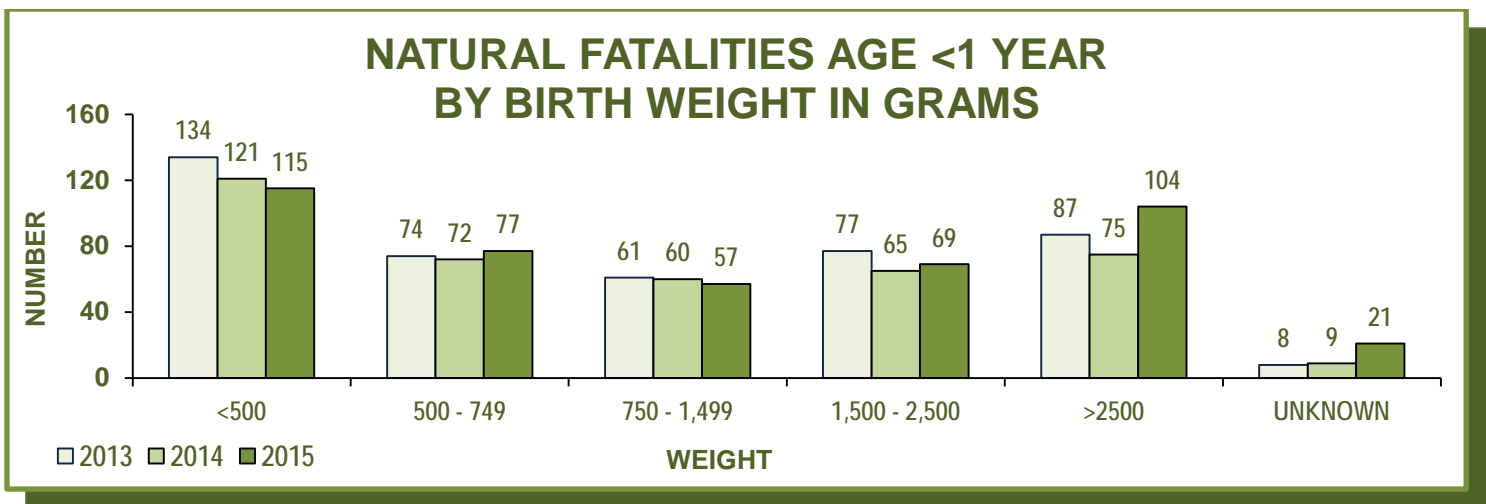




Of the **323** deaths of infants born preterm, **198** (61%) were born at 25 weeks or less. *Very preterm* babies are usually born with severe health issues and are more unlikely to survive, **165** (83%) of these *very preterm* infants died within 24 hours of birth. The youngest premature infant ever known to have survived for an extended period was born at 21 weeks and five days. Prematurity was the direct cause of **191** (96%) of *very preterm* infant deaths, the rest died from congenital defects or birth trauma.

**Seventy-four** (23%) of the preterm infants were in the *moderately preterm* range of 26-32 weeks; **37** (50%) of these infants died within the first 24 hours. **Twenty-three** (31%) lived longer than a week with **two** infants living seven months or longer. **Forty-one** (55%) of the *moderately preterm* infants died from causes directly related to prematurity, **23** (31%) were from congenital anomalies, and the rest died from various cardiovascular anomalies, cancer and infections.

Of the **Fifty-one** (16%) deaths of infants born *late preterm*; **22** (43%) of these infants died within the first 24 hours; **22** (43%) lived more than a week, with **five** (10%) infants living for seven months or longer. Only **five** (10%) of these deaths were directly related to prematurity, **42** (82%) were from congenital anomalies, and the rest died from birth-related events or infections.



Babies born from multiple-birth pregnancies are more likely to be born small. **Twenty-four** of the infants born at less than 500 grams were from multiple-birth pregnancies. The smallest baby ever known to have lived long enough to leave a hospital was 260 grams (8.6 ounces) and was born at 26 weeks gestation.

Maternal health issues, and use of drugs, alcohol or tobacco during pregnancy, are other factors that may cause children to be born premature or with low birth weights. **Thirteen** mothers had medical complications such as diabetes or preeclampsia, **five** admitted to smoking during pregnancy, **one** had heavy alcohol use, **seven** abused over-the-counter or prescription drugs, and **one** was the victim of intimate partner violence.

**Thirty-two** of the children who died from natural causes within the first year of life were known to have had no prenatal care. **Twenty-three** of these children were both known to have been born before the 37th week of gestation and **27** were low birth weight.

## SUDDEN INFANT DEATH SYNDROME

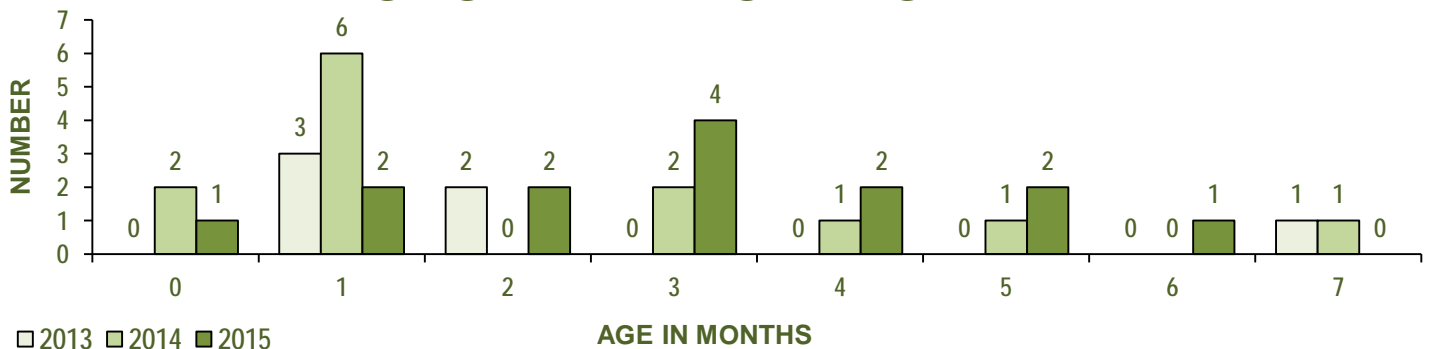
In 2015, 14 Missouri infant fatalities were classified as Sudden Infant Death Syndrome (SIDS).

The term Sudden Infant Death Syndrome (SIDS) describes the sudden unexpected deaths of infants under one year of age, typically during their sleep, which remain unexplained **after** thorough examination of the death scene, case investigation, complete autopsy, and review of medical and social histories. SIDS remains a diagnosis of exclusion; even though current research may be finding the mechanisms of SIDS. There are still no agreed upon pathological markers that distinguish SIDS from other causes of sudden unexpected infant death. There are no warning signs or symptoms. Nationally, 90% of infant fatalities classified as SIDS occur within the first six months of life, peaking at two to four months. While there are several known risk factors, the specific cause or causes of SIDS are not yet defined.

### SIDS FATALITIES BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	2	6	4	White	5	10	12
Male	4	7	10	Black	0	3	2
				Multi-Racial	1	0	0
	6	13	14		6	13	14

### SIDS FATALITIES BY AGE



### Current Research Findings and Theories

Studies show that while a child who dies of SIDS may look normal, many of them may have an underlying genetic abnormality which made them more susceptible. It is hoped that these findings will eventually lead to tests that can determine which children are at greatest risk.

When a child's death is classified as SIDS, their entire body shuts down, like a light switch – once the switch is flipped, there is no going back. They cannot be resuscitated. Even if CPR is immediately initiated, they can keep the baby's heart beating and restore breathing by artificial means, but within 24-48 hours, the baby is determined brain dead and removed from life support.

Continued research, thorough investigations, along with child fatality review, allow for better identification of the intricate causes behind sudden infant death. Standardized and thorough data collection on sudden infant deaths, provided and entered into the National Center for the Review and Prevention of Child Death-Case Reporting System by local CFRP panels, enhance identification of risk factors, facilitation of risk reduction efforts and implementation of prevention best practices, which will have a greater impact in saving infant lives.

## Other Risk Factors

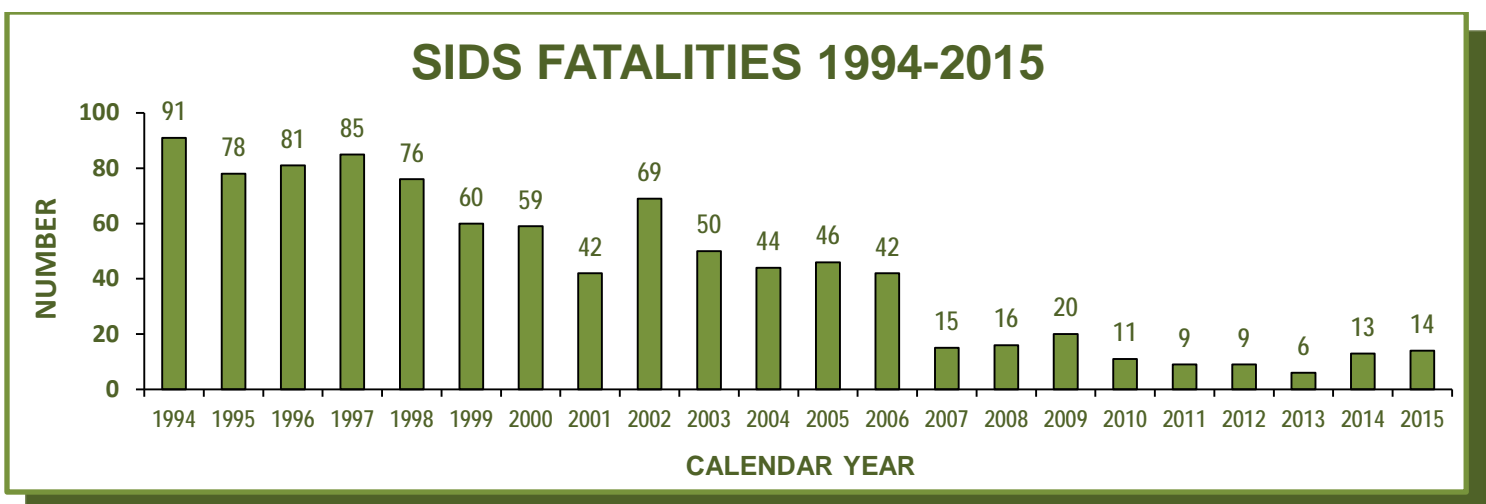
Other risk factors, many associated with the mother's health and behavior, place the infant at a significantly higher risk of sudden, unexpected infant death.

- ✱ Prematurity
- ✱ Low birth weight
- ✱ Less than 18 months between births
- ✱ Mother younger than 18
- ✱ Prenatal smoking
- ✱ Multiple birth
- ✱ Late or no prenatal care
- ✱ Alcohol and substance abuse

Certain environmental stressors have been shown to be highly significant risk factors.

- ✱ Prone or side sleeping
- ✱ Soft sleep surfaces
- ✱ Loose bedding
- ✱ Same sleep surface sharing
- ✱ Overheating
- ✱ Exposure to tobacco smoke

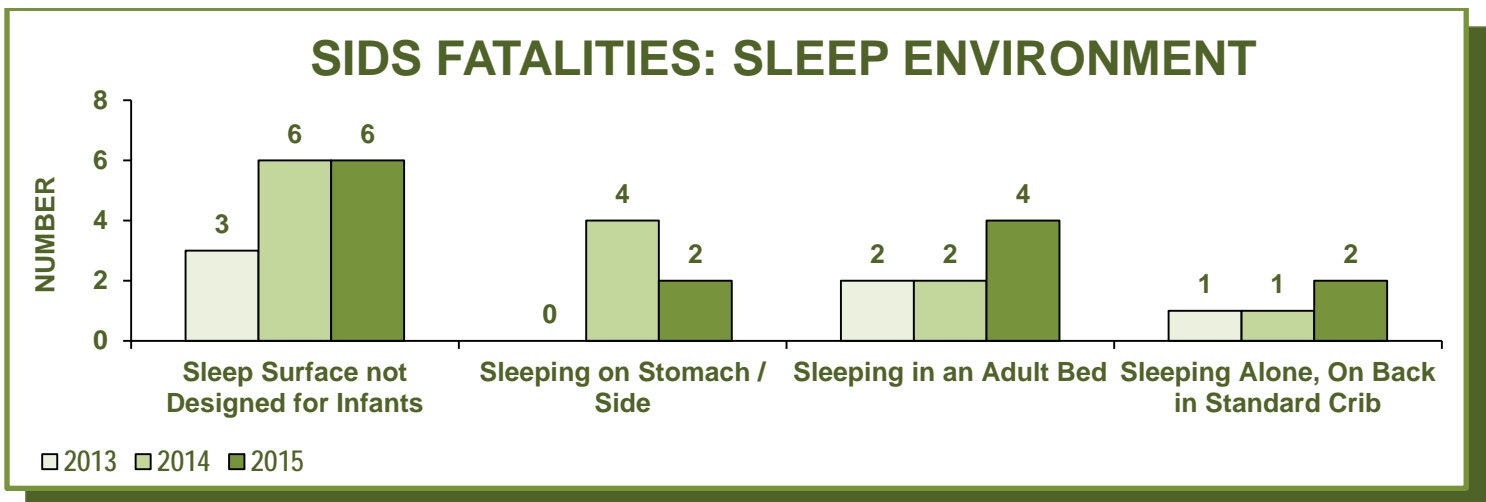
Environmental stressors are modifiable and the reduction of these risk factors through parent/caretaker education has great potential to save infant lives.



Many deaths attributed to SIDS each year, are found in potential high risk environments from which they are unable to extricate themselves, such as being on their stomachs, face down, or where their noses and mouths can become covered by soft bedding. Historically, unsafe sleep arrangements have occurred in a majority of sudden infant deaths diagnosed as SIDS, unintentional suffocation and cause

undetermined. Unsafe sleep arrangements include any sleep surface not designed for infants, inappropriate bedding, sleeping with head or face covered, and sharing a sleep surface.

Of the **13** sudden unexpected infant deaths reviewed by county CFRP panels and diagnosed as SIDS, **five** infants were listed as being placed in an “unknown sleeping position,” possibly due to a lack of thorough scene investigation or the reluctance of caregivers to admit they may have placed the child in a compromising sleep position. In **one** case sleep position was not answered. **Five** were put to sleep on their backs, **one** was on his stomach, and **one** was on her side. **One** infant placed to sleep on its back was found face down. At four months of age, this child was barely within the developmental stage of being able to roll over on its own. **Six** infants were not sleeping in a standard crib or in a bassinet on a firm mattress. The safest place for an infant to sleep is in a standard crib with a fitted sheet, on his or her back, in a onesie, without soft bedding or toys of any kind. Only **two** infants, whose deaths were classified as SIDS, were known to be sleeping alone on their backs, in cribs.



SIDS fatalities are only a small portion of sleep-related infant deaths. In 2015, **94** infant deaths were determined by the county CFRP panels to be sleep-related, of which **14** were diagnosed as SIDS, **three** as natural, **six** as undetermined manner and **71** as suffocation. In summation, **80** infant deaths (25% of all non-natural deaths – injury, homicide, suicide and both undetermined categories combined) may have been preventable, if safe sleep practices had been followed.

## Prevention Recommendations

### For parents and parents to be:

- ✿ Early prenatal care and recommended well-baby care should be encouraged.
- ✿ Avoid smoking during pregnancy. Create a smoke-free environment around the baby after birth.
- ✿ Parents and other caregivers should be informed about and follow safe sleep practices for infants, especially the fact that sleep surface sharing is hazardous.
- ✿ Mothers should be encouraged to breastfeed. Infants may be brought to bed for nursing, but should be returned to their own crib or bassinet when the parent is ready to return to sleep.

### For professionals:

- ✿ All pediatric health care professionals should be knowledgeable about current recommendations for infant safe sleep, and when working with parents, talk about and model safe sleep practices.
- ✿ All child care professionals should be knowledgeable, practice and follow Missouri Department of Health and Senior Services, Daycare Licensing Administrative Rules for infant safe sleep.
- ✿ Law enforcement should utilize SUID forms in investigating sudden unexpected infant deaths, to ensure thorough investigations.

**For community leaders and policy makers:**

- ✿ Implement and support safe sleep campaigns and current safe sleep practices.
- ✿ Require safe sleep education for all licensed child care providers and encourage safe sleep education for all unlicensed child care providers. The American Academy of Pediatrics (AAP) offers a free “Reducing the Risk of SIDS in Child Care” online course. Instructions on how to access the course can be found at: <http://www.healthychildcare.org/sids.html#SIDSmodule>.
- ✿ Mandatory POST-approved child death scene investigation training for law enforcement.
- ✿ Standardize emergency medical services’ policies on transportation of children showing obvious signs of being deceased from the scene of death. These actions make the death investigation more difficult and could prevent being able to give the family the answers they need as to why their child died.

**For child fatality review panels:**

- ✿ All sudden unexpected deaths of infants less than one year of age require a thorough investigation, autopsy by a child death pathologist and review by county CFRP panels.
- ✿ Encourage thorough scene investigations in all sudden unexpected infant deaths, with use of a death scene investigative checklist, which can be obtained either from STAT’s website at: <http://dss.mo.gov/stat/forms.htm>, or a similar version can be found on the CDC website at: <http://www.cdc.gov/sids/SUIDRF.htm>.
- ✿ Ensure a thorough death scene investigation, complete autopsy, along with medical and social review of all available data and information pertaining to any sudden unexpected infant death, as these are of critical importance in providing services, identifying risk factors, developing prevention strategies and applying prevention best practices.

**Safety Standards For Cribs**

Consumer Product Safety Commission (CPSC) standards require that all cribs sold in the United States meet overall crib safety. These standards also apply to the resale of cribs, including garage and rummage sales, online auction sites or even donation to thrift stores. All unsafe cribs should be disassembled and thrown away.

- ✿ Traditional drop-side cribs cannot be made or sold; immobilizers and repair kits are not allowed.
- ✿ Wood slats must be made of stronger woods to prevent breakage.
- ✿ Crib hardware must have anti-loosening devices to keep them from coming loose or falling off.
- ✿ Mattress supports must be more durable.
- ✿ Safety testing must be more rigorous.

**Something We Can Do: Safe Cribs For Missouri**

The safest place for an infant to sleep is alone, in a crib, on his or her back. The crib should be devoid of soft bedding to include bumper pads and pillows, and toys of any kind. Unfortunately, many parents either have not received this information, are instructed differently by family members or for a variety of reasons, or are unable to provide a safe crib for their infant.

The ***Safe Cribs for Missouri*** program provides portable cribs and safe sleep education to low-income families who have no other resource for obtaining a crib. The program is administered by the Department of Health and Senior Services through federal funding from the Maternal Child Health Block Grant (Title V) and by the Children’s Trust Fund and implemented through participating Local Public Health Agencies (LPHAs) that initiate referrals and provide safe sleep education to the families. For additional information about the Safe Cribs for Missouri program, contact (573) 526-4405.

## UNINTENTIONAL INJURY FATALITIES

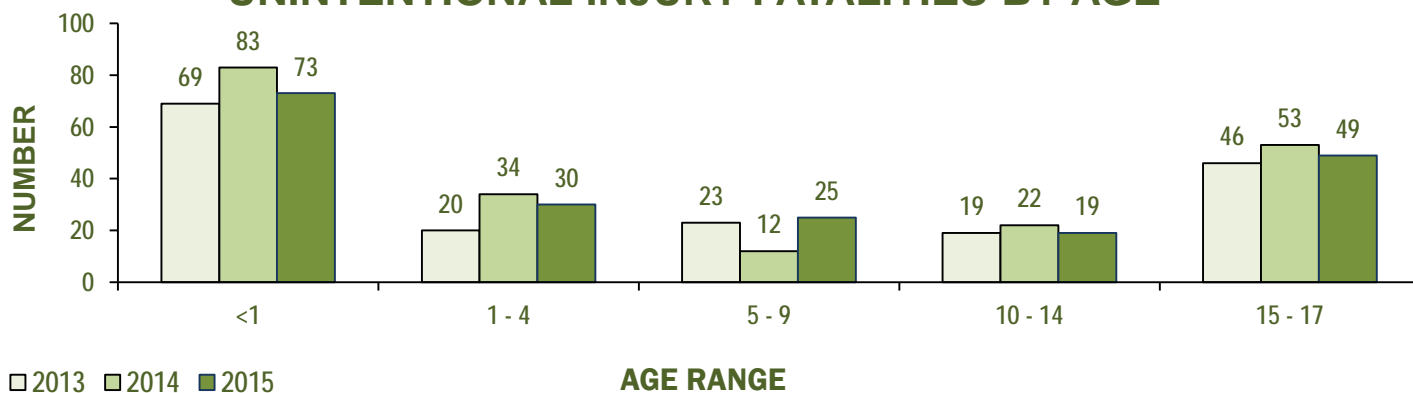
In 2015, there were 196 unintentional injuries fatalities among Missouri children

In 2015, **196** Missouri children died of unintentional injuries, making up **22%** of all Missouri incident fatalities. The leading causes of unintentional injuries are suffocations at **75** (38%) and vehicular deaths at **66** (34%), fire/burns at **22** (11%) and drowning at **15** (8%).

### UNINTENTIONAL INJURY FATALITIES BY CAUSE



### UNINTENTIONAL INJURY FATALITIES BY AGE



### UNINTENTIONAL INJURY FATALITIES BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	69	62	75	White	129	148	143
Male	108	142	121	Black	41	50	44
				American Indian	0	1	0
				Asian	1	1	4
				Pacific Islander	0	0	1
				Multi-Racial	6	4	4
	177	204	196		177	204	196



Unintentional injury fatalities are most prevalent in the youngest and oldest age ranges. Children under one year of age are the most vulnerable, relying on the actions of others to keep them safe; while the older children often engage in risk taking behaviors, as they begin their transition to adulthood.

## Unintentional Versus Accidental

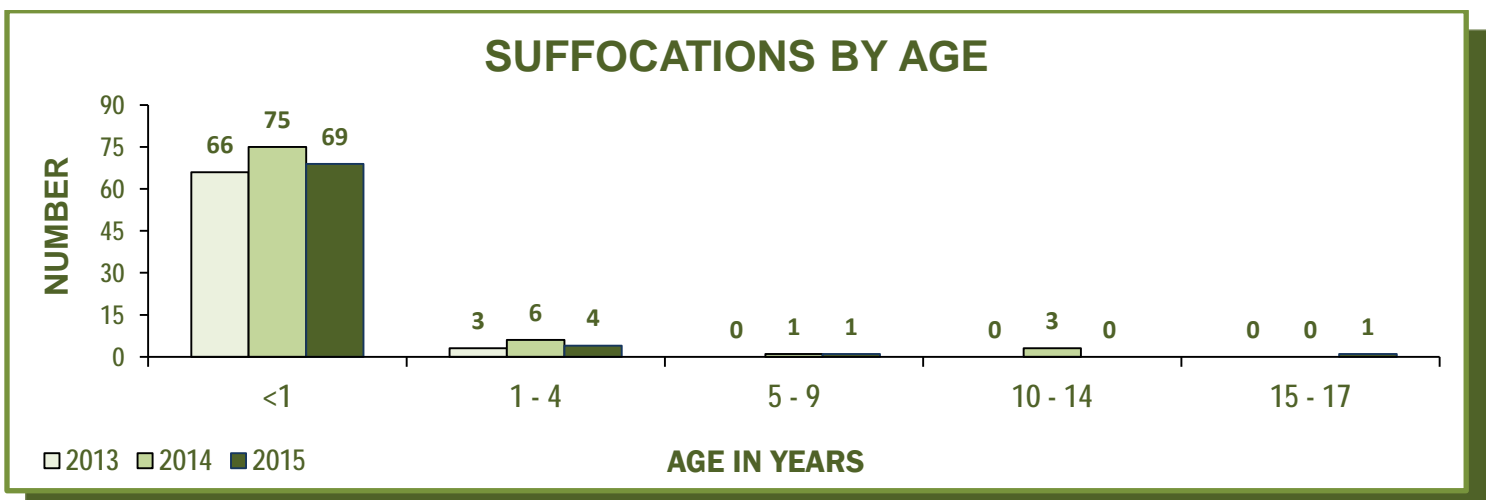
The Child Fatality Review Program was implemented to more accurately identify the causes of child fatalities and strategies for how to prevent similar child deaths from occurring. While this seems rather straightforward, there still remains reluctance in some communities to review circumstances surrounding “tragic, unavoidable accidents.” This is not just a Missouri phenomenon. The real problem rests in the word “*accident*.” An accident is an unexpected occurrence which happens by chance...an event that is not amenable to planning or prediction; whereas, an injury is a definable, correctable event with specific, identifiable risks for occurrence. A better definition for “*accident*” is that it results from a risk that is poorly managed. Accidents, or rather unintentional injuries, do not just happen. They are caused by lack of knowledge, oversight and/or carelessness—a lack of proper training and realization that a risk exists.

Leaving small children (less than six years of age) unsupervised around water (**ten**) or moving vehicles (**five**), allowing a toddler to climb on unanchored furniture with a large television on top (**one**), and placing babies in unsafe sleeping environments (**69**), are all ill-advised; yet, these actions resulted in the deaths of **85** children, making up 43% of all unintentional injury fatalities. Some people believe that vehicular crash deaths (a more appropriate term) cannot be prevented, but it is well known that appropriate road maintenance, following laws, avoiding distractions, driver education, and correctly using seatbelts and child safety seats save lives. Of the **53** children who died while either driving or riding in a motor vehicle, **26** (49%) were known to be unrestrained at the time of the crash.

## UNINTENTIONAL SUFFOCATION

In 2015, unintentional suffocation was the cause of 75 Missouri child fatalities.

Deaths by unintentional suffocation are much more prevalent among children under one year of age than from any other age range. In 2015, **69** (92%) of the unintentional suffocation deaths of children were under one year of age, **four** (5%) were one to four years of age.

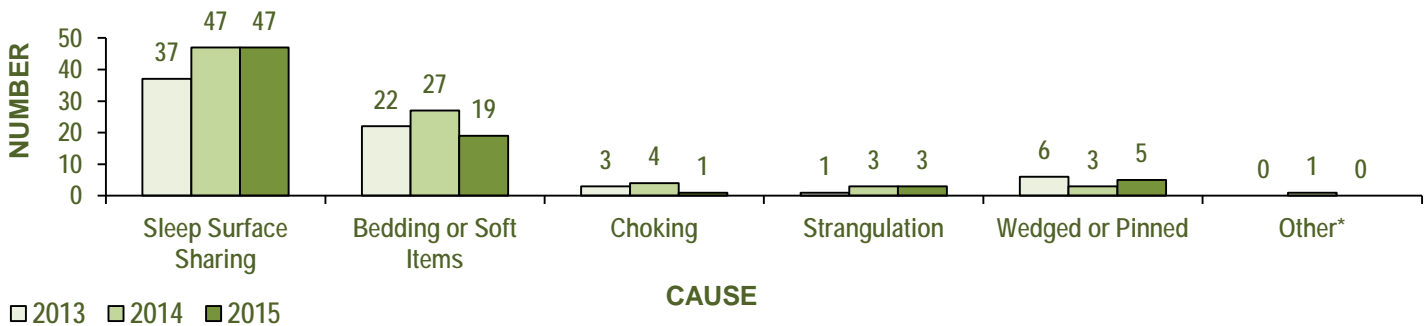


The pattern of deaths by unintentional suffocation differs by age. Older children are typically injured from strangulation by hanging during play, while infant suffocation is often directly related to an unsafe sleep environment. Accidental suffocation and strangulation in bed is the leading cause of infant injury deaths. There are several possible mechanisms which can cause sleep-related suffocations in infants; i.e., suffocation by soft bedding, overlay, wedging, entrapment or strangulation.

### SUFFOCATION BY SEX AND RACE

	2013	2014	2015	RACE	2013	2014	2015
Female	31	33	31	White	44	54	55
Male	38	52	44	Black	23	26	16
				American Indian	0	1	0
				Asian	0	1	0
				Multi-Racial	2	3	4
	69	85	75		69	85	75

### SUFFOCATION/STRANGULATION BY CAUSE



\* In 2014, a five-month-old child pulled out a tracheotomy tube.

Many parents and caregivers do not understand the risks associated with unsafe sleeping arrangements. Infants can, by smothering or rebreathing, suffocate when placed in compromising positions such as with a soft mattress, cushion, pillow, comforter or bumper pad, or when their faces, noses and mouths become covered by soft bedding, such as pillows, blankets, and comforters. Sleep positions such as propping an infant cause the child's head to fall forward blocking its airway or the infant can rollover into soft sleep surfaces. Placing an infant down on their stomach on soft surfaces increases the risk of the surface forming around the child's face.

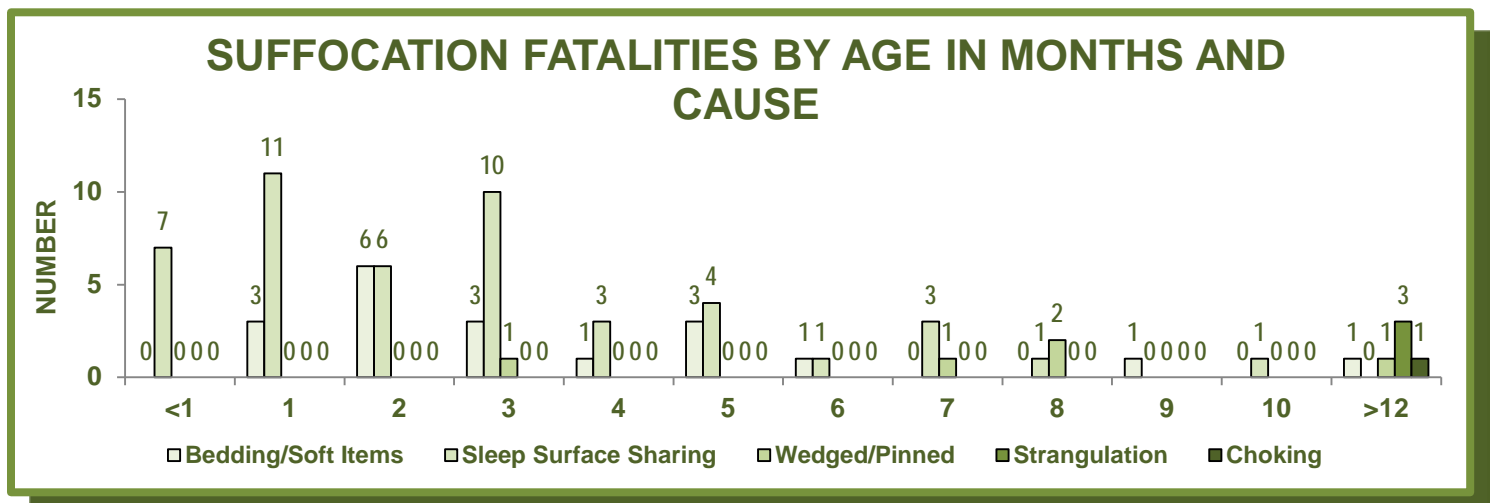
**Nineteen** infants died due to soft bedding; **eight** were in their cribs with soft bedding and/or bumper pads; **four** were placed to sleep in bassinets with soft bedding; **one** was swaddled and placed on her side in a pack-n-play and later found face down; **five** were placed on adult beds with either pillows or comforters and **one** was placed face down on an egg-crate mattress.

As infants get older and become more mobile, the risks of entanglement or wedging become more problematic. Wedging deaths most often occur between three to seven months, when infants have developed motor skills giving them the ability to move to corners of beds and cribs; yet, they do not have the muscle development or motor control to be able to extricate themselves from a wedged position. There were **five** wedging deaths, **two** infants became trapped between the mattress and the crib

railings; **one** fell between the mattress and footboard of an adult bed; **one** was found between the bed and wall after having been put down for a nap earlier and **one** was wedged between an air mattress and a wall.

An **overlay** is a type of unintentional suffocation that occurs when an infant is sharing the same sleep surface with one or more persons (adults, other children or even pets) who either rollover on or entrap the infant, such as under an arm or leg. Suffocation due to overlay can be verified by one of the following means: 1) someone who was on the same sleep surface, admitting that they were overlying the infant when they awoke; or 2) the observations of another person.

To reduce the risk of unintentional suffocation deaths of infants, have the infant sleep in the parents' room, but on a separate sleep surface (crib, bassinette or pack 'n play) close to the parents' bed. This arrangement not only decreases the risk of SIDS by as much as 50% and is safer than bedsharing or solitary sleeping (when the infant is in a separate room), but is also more likely to prevent suffocation, strangulation or entrapment, which may occur when the infant is sleeping in an adult bed. Furthermore, room sharing without bedsharing allows close proximity to the infant, which facilitates feeding, comforting and monitoring of the infant. Unfortunately, many Missouri parents continue to share a sleeping surface with their infants. Of the **69** infants under one year of age that died of unintentional suffocation, **47** (68%) were sharing a sleep surface with one of more individuals; **36** infants were sleeping in an adult bed; **13** were sleeping on sofas; **one** was sleeping on the floor with her mother; **one** was sleeping on a chair and **one** was sleeping on an egg-crate mattress.



The Child Safety Protection Act bans any toy intended for use by children under three years of age that may pose a choking, aspiration or ingestion hazard and requires choking hazard warning labels on packaging for these items, when intended for use by children ages three to six years. To address strangulation hazards, the Consumer Product Safety Commission (CPSC) issued mandatory standards for various items such as cribs and window blinds, as well as voluntary guidelines for children's clothing to prevent children strangling; i.e., from drawstrings of outerwear garments, such as jackets and hoodies. There were **three** children who died from strangulation; **one** toddler became entangled in a mini-blind cord, **one** special-needs child slipped down in a stroller and the restraint belt compressed her neck, and **one** special-needs child was found slumped over in a position that compromised his breathing, from which he could not extricate himself. Additionally, there was **one** child who choked on popcorn.

Unintentional suffocation deaths in older children are often related to circumstances associated with choking, aspiration and/or strangulation.

## Prevention Recommendations:

### For parents:

- ✿ Remove drawstrings from younger children's clothing.
- ✿ Tie up or remove all cords for window covers.
- ✿ Buy only age-appropriate toys.
- ✿ Do not leave potentially hazardous items accessible around small children and infants; i.e., plastic bags, coins, marbles, game pieces and other small items that can be placed in the mouth.

### For community leaders and policy makers:

- ✿ Support legislation that requires improved product design, or removal of hazardous products from the market.

### For professionals:

- ✿ Information about unintentional suffocation/strangulation hazards to young children, including unsafe and safe sleep practices, should be widely disseminated.
- ✿ Teach parents CPR and the Heimlich maneuver for infants and young children.

### For child fatality review panels:

- ✿ Report any child death that appears to involve a product hazard to the Consumer Product Safety Commission (CPSC). The CPSC can also be accessed for product safety research assistance.

## UNINTENTIONAL MOTOR VEHICLE FATALITIES

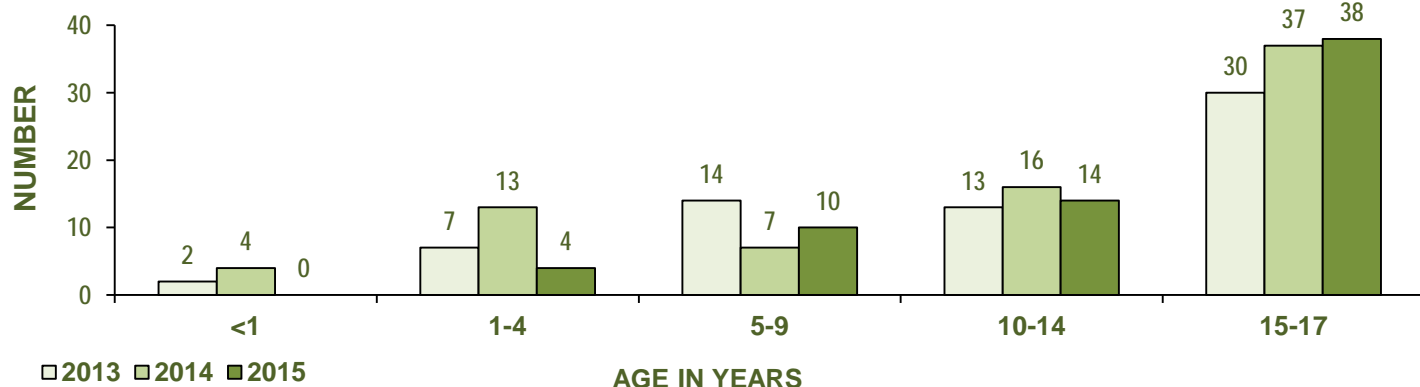
There were 66 unintentional vehicle fatalities in 2015.

- ✿ Seventy-one percent of the children who died from vehicle crashes were teenagers.
- ✿ Forty-five percent of the teens who died from vehicle crashes were drivers, 40% were passengers, 13% were pedestrians and 2% were bicyclists.
- ✿ Seventy-four percent of the teens who died from vehicle crashes were male, 26% female. Seventy-two percent were white, 23% were black.
- ✿ Fifty-three percent of the teen drivers and passengers were known to be unrestrained at the time of the crash.

### MOTOR VEHICLE FATALITIES BY SEX AND RACE

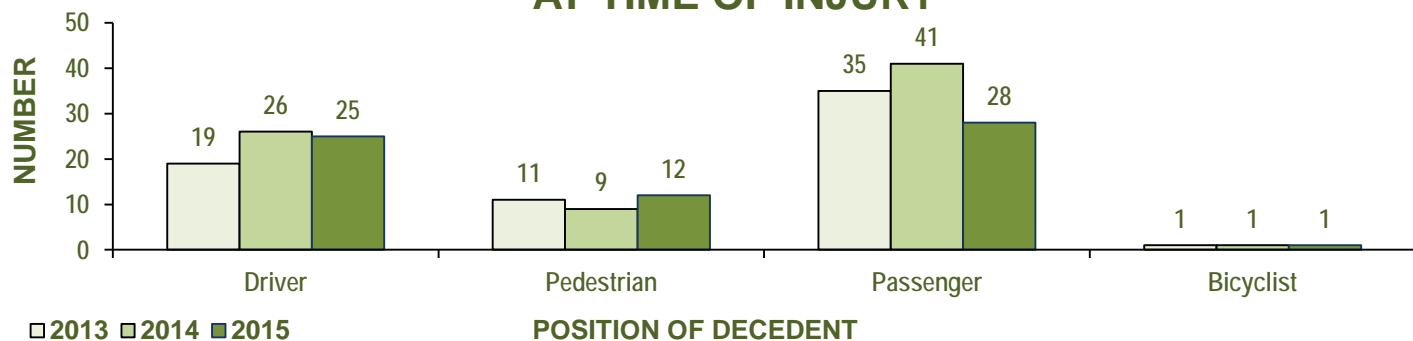
SEX	2013	2014	2015	RACE	2013	2014	2015
Female	28	18	22	White	57	60	48
Male	38	59	44	Black	6	16	15
				Asian	1	0	2
				Pacific Islander	0	0	1
				Multi-Racial	2	1	0
	66	77	66		66	77	66

### MOTOR VEHICLE FATALITIES BY AGE



For the past five years, unintentional vehicle crashes have been the second leading cause of injury deaths for children. Motor vehicle fatalities include drivers and passengers, pedestrians who are struck, bicyclists and occupants in any other form of transportation, including airplanes, trains and all-terrain vehicles. **Fifty-six** of the **66** unintentional motor vehicle deaths were reviewed by local CFRP panels.

### MOTOR VEHICLE FATALITIES BY POSITION AT TIME OF INJURY



### ALCOHOL AND/OR OTHER DRUG USE

DECEDENT AS DRIVER IMPAIRED	2	DRIVER OF OTHER VEHICLE IMPAIRED	4
DRIVER OF VEHICLE IMPAIRED	3	INTOXICATED PASSENGERS	1
NOT APPLICABLE	56		

### ROAD CONDITIONS\*

NORMAL	37	INADEQUATE LIGHTING	1
GRAVEL	6	OTHER	4
MUDDY	1	UNKNOWN CONDITION	2
FOG	1	NOT ANSWERED	14
WET	3		

TYPE OF VEHICLE	
CAR	34
TRUCK	10
ATV	7
SUV	6
VAN	2
TRACTOR	2
PLANE	2
HORSE DRAWN BUGGY	1
BICYCLE	1
UNKNOWN	1

LOCATION OF CRASH**	
HIGHWAY	21
RURAL ROAD	13
CITY STREET	11
RESIDENTIAL STREET	7
DRIVEWAY	4
INTERSECTION	3
OFF ROAD	3
PRIVATE AIR STRIP	2
PARKING AREA	1
UNKNOWN	1

CONTRIBUTING CAUSES OF CRASH***			
SPEEDING OVER LIMIT	20	DRIVER DISTRACTION	2
RECKLESSNESS	14	POOR VISIBILITY	2
DRIVER INEXPERIENCE	11	BACK / FRONT OVER	2
OTHER DRIVER ERROR	11	ANIMAL IN THE ROAD	2
DRUG OR ALCOHOL USE	10	MECHANICAL FAILURE	1
OTHER	10	FATIGUE / SLEEPING	1
UNSAFE SPEED FOR CONDITIONS	9	POOR SIGHTLINE	1
ROLLOVER	5	ROAD HAZARD	1
RAN STOP SIGN/RED LIGHT	4	UNKNOWN	6

RESTRAINTS – LAP BELT	
PRESENT, USED CORRECTLY	13
PRESENT, NOT USED	24
PRESENT, USED INCORRECTLY	1
NOT APPLICABLE	20
UNKNOWN	5
NOT ANSWERED	3

RESTRAINT – HELMET USE	
PRESENT, NOT USED	1
NEEDED, NONE PRESENT	3
NOT APPLICABLE	58
UNKNOWN	4

RESTRAINT – CHILD SEAT	
UNKNOWN	1
NOT APPLICABLE	65

RESTRAINT – BOOSTER SEAT	
NEEDED, BUT NONE PRESENT	3
NOT APPLICABLE	62
UNKNOWN	1

\*In some cases, more than one condition was applicable.

\*\* In some cases, more than one location was applicable.

\*\*\* In some cases, there were multiple causes.

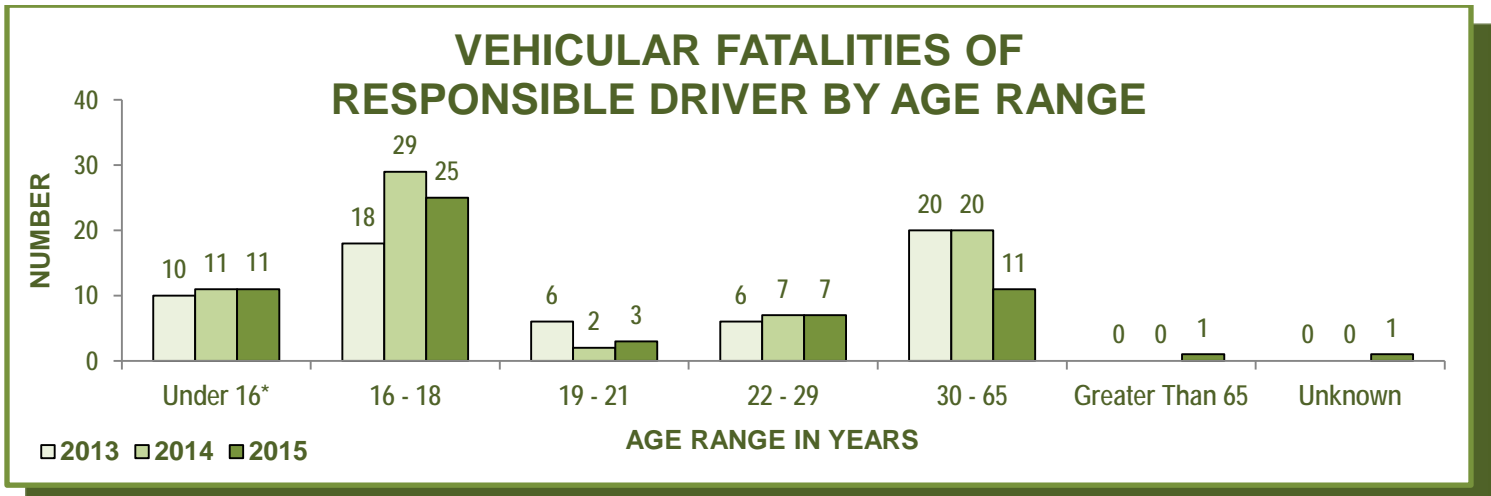
Most vehicle crashes occur due to the actions of one or more persons, be it recklessness, impaired driving, inattention or simply inexperience.

Of the 66 reported motor vehicle fatalities, the driver of the child's vehicle was responsible for 26 (39%) of the crashes; 22 (33%) were caused by the teen/child as driver (note this includes the operator of a bicycle); 11 (17%) were caused by the driver of another vehicle and one (2%) was unknown. Five (8%)



deaths were pedestrians who, through their own actions, caused the accident which took their lives and **one** (2%) was caused by an intoxicated passenger falling from a moving vehicle.

As compared to other drivers, a higher proportion of teenagers are responsible for their fatal crashes, because of their own driving errors. Of the **59** motor vehicle fatalities in which a driver was determined to be responsible for the accident, **39** (66%) were age 21 or less, of which **25** were between 16 and 18 years old and **11** were below 16 years of age.

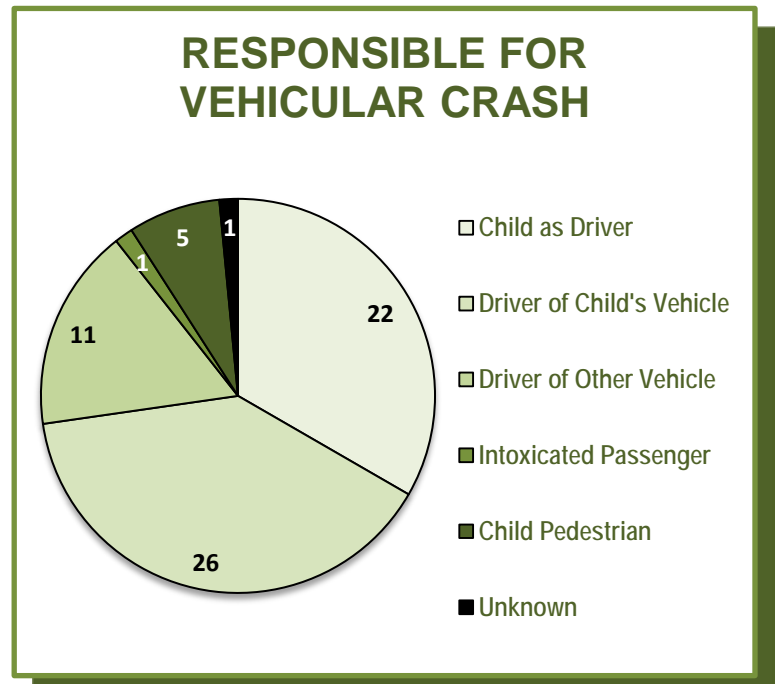


\* Includes drivers of bicycles, skateboards and ATV's, as well as underage and unlicensed drivers.

## Driver and Passenger Fatalities

Of the **66** reported motor vehicle child fatalities in 2015, **53** (80%) involved drivers and passengers. Public education and child restraint laws have led to an increase in the use of child restraints; however, much work still needs to be done, as **13** (46%) of the **28** child passenger fatalities were known to be riding unrestrained. **Three** of the **28** child passenger fatalities were under age five and all **three** were known to be unrestrained. The most common reasons restrained children are killed are misuse of child safety seats and premature graduation to seatbelts. **One** child passenger fatality was incorrectly secured in a seat belt.

Of the **66** reported unintentional motor vehicle fatalities, **ten** involved either a victim or a driver who was impaired. **Four** crashes involved teen drivers who were impaired, resulting in **five** deaths. **One** teen was an intoxicated passenger who fell from the back of a vehicle and **one** pedestrian was struck by an intoxicated hit and run driver. **Two** drunk drivers caused **four** child deaths. In **one** of these cases the child was a passenger in a stalled vehicle that was hit by a drunk driver; the other **three** died when a drunk driver drove the wrong way down the highway and struck their vehicle head on.



In Missouri, the highest fatality rates are found among teenage drivers. Teenagers are involved in three times as many fatal crashes as other drivers due to inexperience and immaturity, along with greater risk exposure.

It takes time to master the skills needed to safely operate a motor vehicle. Because of this, Missouri has a Graduated Driver's License law for new drivers. The law requires all first-time drivers ages 15 through 18 complete a period of driving with a licensed driver (instruction permit), and restricted driving (intermediate license), before getting a full driver license. The issuance of a permit ensures that a new driver gets at least 40 hours of supervised driving practice, before being allowed to drive on their own. The intermediate license restricts the number of teens that a new teen driver can have in their vehicle, as well as the hours of day they are allowed to drive.

Missouri is known for its changing weather. Unfortunately, teen drivers are often unknowledgeable and/or ill-prepared for dealing with adverse weather conditions. There were **nine** child fatalities in **seven** vehicle crashes that involved inclement weather and/or driving at unsafe speeds for road conditions. In all **seven** of these child fatalities, the vehicle was being operated by a teenager, 18 or younger. Educating teens on defensive driving to include how to drive in inclement weather or adverse road conditions; i.e., how to react to the vehicle skidding, sliding or hydroplaning; when to reduce speed, brake and/or let off the gas pedal when traveling on ice or snow covered bridges or roadways; or never driving through flooded roadways, etc., can save lives.

Distracted driving is any activity that takes a person's attention away from the task of driving, be it eating, changing radio station or texting. As texting requires visual, manual and cognitive attention from the driver, it is by far the most alarming distraction. According to distraction.gov, 71% of teens and young people say they have composed/sent text messages while driving, and 78% of teens and young adults say they have read one while driving. Currently, Missouri law bans all drivers, 21 and younger, from text messaging and commercial drivers from texting or using handheld cell phones while driving.

Regulations alone cannot address teen driver safety. Graduated licensing for teen drivers and texting bans must be combined with education for both parents and teens about identified risks to teenage drivers, such as the dangers of underage drinking, speeding, inattention, distracted driving and low seatbelt use. Parents often believe their child would never participate in such foolish behaviors, but 54% of the high school participants in the 2013 Missouri Youth Risk Behavior Survey indicated that they had talked on a cell phone while driving within the past 30 days. Forty-six percent of the participants admitted to texting or emailing while driving, and 9% of them said that they had driven while drinking within the same timeframe.

Seatbelts are known to reduce the risk of fatal motor vehicle injury by as much as 45%. There were **35** teenagers, age 15-17, that died in motor vehicle crashes; **17** were passengers and **18** were drivers. Of these **35** teen driver and passenger deaths, **18** (51%) were known to be unrestrained at the time of the crash.

## Pedestrian Fatalities

**Twelve** motor vehicle fatalities involved child pedestrians. Of these children, **three** were between the ages of one and four; **two** were between the ages of five and nine; **two** were between the ages of 10 and 14; and **five** were between the ages of 15 and 17.

- ☀ **Three (25%)** children died when they were backed over in driveways. Unfortunately, this is not a rare occurrence as young children are at increased risk of pedestrian injury and death in

driveways and other relatively protected areas, as it is harder for drivers of larger-sized vehicles such as SUV's and vans to see a small child either behind or in front of the vehicle.

- ✿ Young children are particularly vulnerable, because they are exposed to traffic threats that exceed their cognitive, developmental, behavioral, physical and sensory abilities. Also, parents often overestimate their children's pedestrian skills. Children are impulsive and have difficulty judging speed, spatial relations and distance. **Three** children ran out in front of moving vehicles.
- ✿ Practical, skills-based pedestrian safety training efforts have demonstrated improvements in children's traffic behavior. Environmental modifications are also effective at reducing traffic-related pedestrian incidents.

While young children are vulnerable to pedestrian accidents due to their inexperience, teens are vulnerable due to their impulsiveness and risk-taking behavior. Teens are especially in danger if they are in groups, or if they have been consuming alcohol. **Six** teenagers were killed in pedestrian accidents. **Four** of them were killed while crossing major highways, and **two** were struck by hit and run drivers.

## Bicycle-Related Fatalities

By definition, motor vehicle fatalities include bicycle-related injuries that occur when children are either struck by a motor vehicle or other circumstance. Of the **66** reported motor vehicle fatalities, **one** was a bicyclist.

Bicycles are associated with more childhood injuries than any other consumer product. Head injury is the leading cause of death in bicycle crashes and is the most important determinant of bicycle-related death and permanent disability. Evidence has shown that the single most effective safety device available to reduce head injury and death from bicycle crashes is a helmet. In the event of a crash, wearing a bicycle helmet reduces the risk of head injury by as much as 85% and the risk of brain injury by as much as 88%.

In comparison with younger children, children ages 10 to 14 are at greater risk for traumatic brain injury from a bicycle-related crash, most likely because helmet use declines as children age. According to 2013 Missouri Youth Risk Behavior Survey, among students that rode a bicycle in the past 12 months, 56.7% of middle school students and 86.7% of high school students never or rarely wore a bicycle helmet.

More than 80% of bicycle-related deaths are directly connected to the bicyclist's actions. Such actions as riding into a street without stopping, turning left or swerving into traffic that is coming from behind, running a stop sign and riding against the flow of traffic are all too common, and are often fatal. Children should be taught the rules of the road and to obey all traffic laws.

## All-Terrain Vehicle Fatalities

**Seven** of the **66** reported motor vehicle fatalities, involved all-terrain vehicles (ATVs). ATVs are designed for off-road use on a variety of terrains. By the nature of their design, ATVs can be unstable due to their high center of gravity, inadequate suspension system, no rear-wheel differential, and of further hazard due to their weight and ability to reach higher speeds. Most injuries associated with ATVs occur when the driver loses control, the vehicle rolls over or there is a collision with a fixed object. The driver or passenger is either pinned beneath the ATV or thrown off. Head injuries account for most of

the deaths. **None** of the **seven** ATV-related child fatalities were known to have been wearing helmets, **four** of them died from head trauma and **three** from compression or blunt force trauma.

It is recognized by many safety organizations that children do not have the cognitive and physical abilities to drive or ride these vehicles safely. Missouri requires that all children under the age of 18 wear helmets when riding on an ATV; no one under 16 operates an ATV unless on a parent's land or accompanied by a parent; and passengers may not be carried with the only exceptions being for agricultural purposes and ATVs designed to carry more than one person. All **seven** of the child ATV deaths were involved in events that were in violation of these laws.

## Trends in Vehicular Fatalities

MISSOURI MOTOR VEHICLE FATALITIES 2000 - 2015			
Year	Child Fatalities	Total Fatalities	Percentage of Total Fatalities
2000	161	1157	13.92%
2001	127	1098	11.57%
2002	137	1208	11.34%
2003	147	1232	11.93%
2004	135	1130	11.95%
2005	137	1257	10.90%
2006	133	1096	12.14%
2007	105	992	10.58%
2008	99	960	10.31%
2009	80	878	9.11%
2010	58	821	7.06%
2011	85	786	10.81%
2012	72	826	8.72%
2013	77	757	10.17%
2014	83	766	10.84%
2015	70	853	8.21%

Decades of motor vehicle safety prevention efforts are making a positive difference in the number of deaths on Missouri roads. Since 2000, the annual number of overall vehicular fatalities in Missouri has dropped 26%. In comparison, the number of child fatalities from vehicle crashes have dropped 56%, meaning that not only have the overall numbers declined, but also the percentage of children, age 17 and under, who died from vehicle crashes has also significantly decreased.

There are many safety and prevention factors that have played a part in this reduction, to include, but not limited to, improved passive safety systems in vehicles such as airbags and crumple zones; active technologies such as electronic stability control and sensor systems; child safety restraint equipment; traffic safety prevention programs and active law enforcement efforts.

## Prevention Recommendations:

### For parents:

- ✿ Children, 12 years old and younger, should always ride appropriately restrained in the back seat of all passenger vehicles, particularly vehicles with airbags.
- ✿ Children under eight should ride in a booster seat, unless they are 80 pounds or 4'9" tall.
- ✿ Children should always wear a helmet when participating in any wheeled activities, including bicycles, skateboards, inline skates, scooters, ATVs, etc.
- ✿ Never allow children under 12 years of age to cross streets alone.
- ✿ Always model and teach proper pedestrian behavior.
- ✿ Children under 16 years of age should never ride or operate ATVs of any size, including youth-sized ATVs.
- ✿ Never leave children alone in a motor vehicle, even when they are asleep or restrained.

- ✿ Each person riding on a personal watercraft (PWC) must wear a US Coast Guard-approved Type I, II, III, or V Personal Flotation Device (PFD).
- ✿ Never leave young children unsupervised in or around vehicles, especially if they are moving.

#### **For community leaders and policy makers:**

- ✿ Community leaders should encourage enforcement of existing child restraint laws.
- ✿ Missouri lawmakers should strengthen child restraint laws by mandating the following:
  - Include children four to 15 years of age in the child restraint law; thereby, making restraint use in the age group subject to primary enforcement.
  - Raise the penalty for violation of child restraint laws to at least \$100 and one driver's license point.
  - Remove the provision of the vehicle equipment regulations that states, if there are not enough safety belts for all passengers, they are not in violation for failure to use.

#### **For professionals:**

- ✿ Facilitate and implement programs that provide hands on education to parents and other family members on appropriate restraint of children in motor vehicles; i.e., child safety seat checkup events.
- ✿ Facilitate and implement child traffic and water safety programs.
- ✿ Facilitate and implement programs that educate parents on helmet use, instructions on fitting helmets properly and events that provide checkups and helmets at little or no cost.
- ✿ Facilitate and implement programs to educate teens on adverse driving conditions to include inclement weather.
- ✿ Train and make available trained public safety staff (i.e., law enforcement and firemen) that, when requested by concerned citizens, can check to determine if child safety seats are properly installed and secure.

#### **For child fatality review panels:**

- ✿ Review all vehicle-related deaths to identify and address prevention messages for your community.
- ✿ Address appropriate concerns related to signage, visibility and/or roadway maintenance.
- ✿ Ensure that speed limits and laws that prohibit driving while intoxicated, along with other traffic safety laws, are strictly enforced.

## **Keeping Children Safe In and Around Motor Vehicles**

Attention concerning child safety and motor vehicles has focused largely on protecting children as they ride in and on vehicles of all kinds, primarily motor vehicles on public roads. The Missouri CFRP reviews and collects data on motor vehicle fatalities among children as passengers, drivers, pedestrians and bicyclists. However, children who are unsupervised in or around motor vehicles that are not in traffic are at an increased risk for injury and death, whether it be heatstroke from being left in vehicles, back overs or vehicles being accidentally put into gear.

Education campaigns aimed at parents and caregivers, should communicate ensuring adequate supervision when children are playing in areas near parked motor vehicles; never leaving children alone in an motor vehicle, even when they are asleep or restrained; and keeping motor vehicles locked in a garage or driveway, and keeping keys out of children's reach.



## Something We Can Do: “Not Even For A Minute” Campaign



The Children’s Trust Fund (CTF) points out that a child left alone in an automobile is a potential tragedy that can be prevented. For additional information, or to order education materials, contact CTF at 573-751- 5147 or visit [www.ctf4kids.org](http://www.ctf4kids.org).

### Resources and links:

Heatstroke Deaths of Children in Vehicles  
<http://ggweather.com/heat/>

Slow Down, Walk Around



## UNINTENTIONAL FIRE/BURN FATALITIES

In 2015, 23 Missouri children died of unintentional fire/burn injuries.

- ☀ Seventy-four percent of the children who died in a fire lived in rural areas.
- ☀ Forty-eight percent of the children died from fires started by heating stoves or space heaters, 17% from electrical wiring issues, 4% from smoking materials, and in 31%, the fire marshal could not determine the cause of the fire.
- ☀ Children five and under made up 61% of the fire deaths.
- ☀ Fifty-seven percent of structures that burned were rentals, of those only 8% had smoke alarms.
- ☀ In all fire/burn fatalities, the children died from smoke inhalation.

Nationally, fires and burns were the third leading cause of unintentional death among children one to nine years of age, and fourth among both children less than one and ages 10-14. Children ages one to four were at much higher risk than any other age group in children.

Two out of three times when a child is injured or dies from a residential fire, a smoke detector is either not working or not present. Having a working smoke detector is very important in reducing the chance of dying in a fire by nearly half.

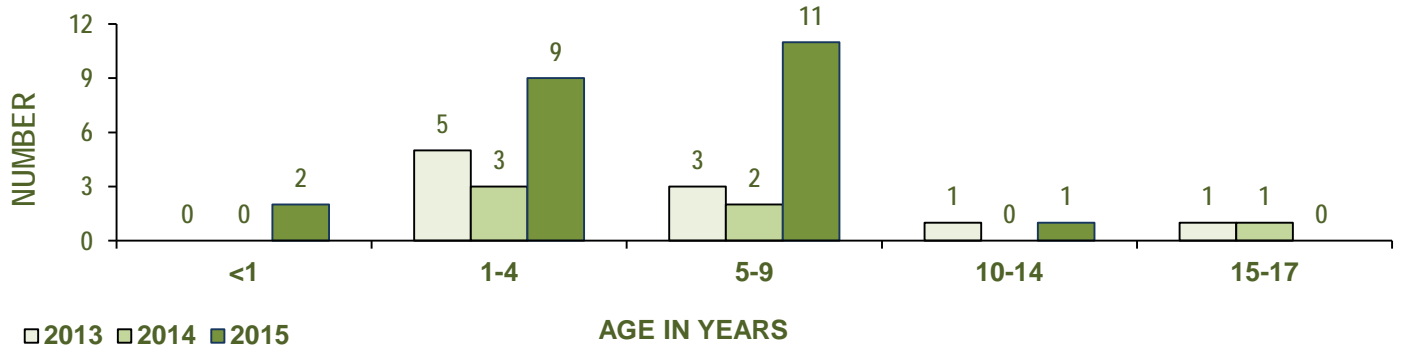
### Fire/Burn Fatalities among Children

In 2015, there were **nine** incidents causing **23** child deaths. Male children are generally at greater risk of death than females. **Ten** of the **23** fire/burn fatalities were male. **Eleven** of the fire/burn fatalities, were age four or younger. Young children have a less acute sense of danger or understanding of how to quickly and properly react to a fire or life-threatening burn situation. It is often more instinctual for a child



to “hide” from a fire, than try to escape. They are also less physically able to tolerate toxic combustion, rendering them more susceptible to fire-related asphyxiation. Additionally, younger children have thinner skin, causing them to be more susceptible to severe burns and scalding at lower temperatures, than what would still be considered tolerable by many adults.

### FIRE/BURN FATALITIES BY AGE



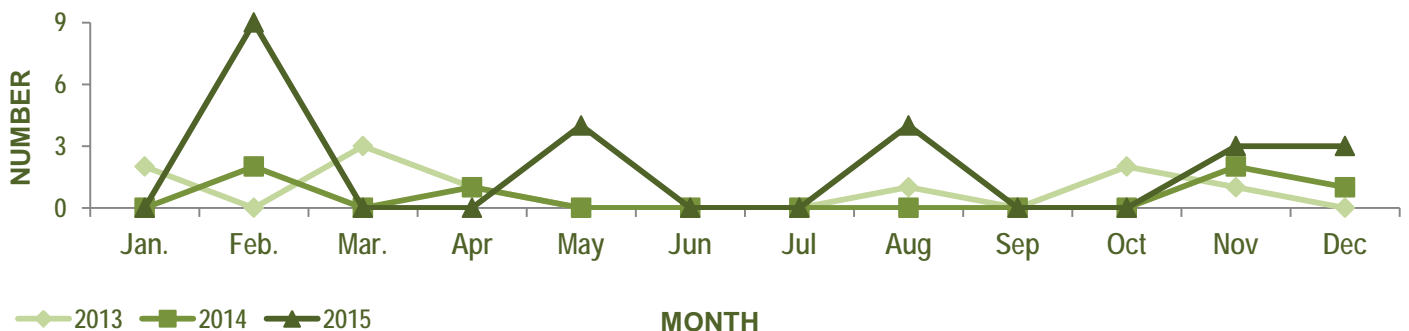
### FIRE / BURN FATALITIES BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	2	1	13	White	8	4	17
Male	8	5	10	Black	2	2	6
	10	6	23		10	6	23

Children from low-income families are at greater risk for fire-related death and injury, due to factors such as a lack of working smoke detectors, substandard housing, use of alternative heating sources and economic constraints on providing adequate adult supervision. Children living in rural areas have a dramatically higher risk of dying in a residential fire, primarily due to the types of winter heating used. Death rates in rural communities are more than twice the rates in large cities, and more than three times higher than rates in large towns and small cities. **Sixteen** of the **23** fire deaths were in rural areas.

Of the fatal fires reviewed, only **three** were indicated to have smoke detectors. Organizations and fire departments that promote residential fire safety and burn prevention have also played a role in reducing the death rate from fire and burn injury.

### FIRE/BURN FATALITIES BY MONTH OF DEATH



SMOKE ALARM PRESENT	
Yes	3
No	19
Unknown	1

SMOKE ALARM IN WORKING ORDER	
Yes	0
No	3
Unknown	1
Not Applicable	19

FIRE STARTED BY	
No One	15
Unknown	8

TYPE OF BUILDING	
Single Home	17
Duplex	2
Apartment	4

MULTIPLE FIRE DEATHS	
Yes	21
No	2

WAS STRUCTURE A RENTAL PROPERTY	
Yes	13
No	5
Unknown	5

SOURCE OF FIRE					
Cigarette or Cigar	1	Space Heater	8	Undetermined	7
Heating Stove	3	Electrical Wiring	4		

The change to and from daylight savings time to standard time has become synonymous with the “*Change Your Clock, Change Your Battery*” Fire Prevention Program.

## Prevention Recommendations:

### For parents:

- ✿ Young children require vigilant supervision.
- ✿ Keep matches, gasoline, lighters and all other flammable materials locked away and out of children’s reach.
- ✿ Install smoke detectors on every level and in every sleeping area. Test them once a month. Replace the batteries at least once a year.
- ✿ Plan and practice fire escape routes from each room of your home and identify an outside meeting place. Practicing an escape plan may help children who become frightened and confused in a fire, to escape to safety.

### For community leaders and policy makers:

- ✿ Enact laws that require smoke detectors in new and existing housing, and make landlords responsible for ensuring that rental properties have working smoke detectors.
- ✿ Enforce building codes and conduct inspections.

### For professionals:

- ✿ Smoke detector giveaway programs implemented in communities have proven useful when high-risk areas are targeted.
- ✿ Implement a multi-faceted community campaign to prevent burn injuries, targeting a well-defined population with a very specific message.

### For Child Fatality Review Panels:

- ✿ When reviewing a child death resulting from a residential fire, determine if the local building code requires smoke detectors in the residence, and if a working smoke detector was present in the home. Use that information to develop an action plan; i.e., work to establish or change building codes or pursue prosecution, if negligence or lack of appropriate supervision occurred.

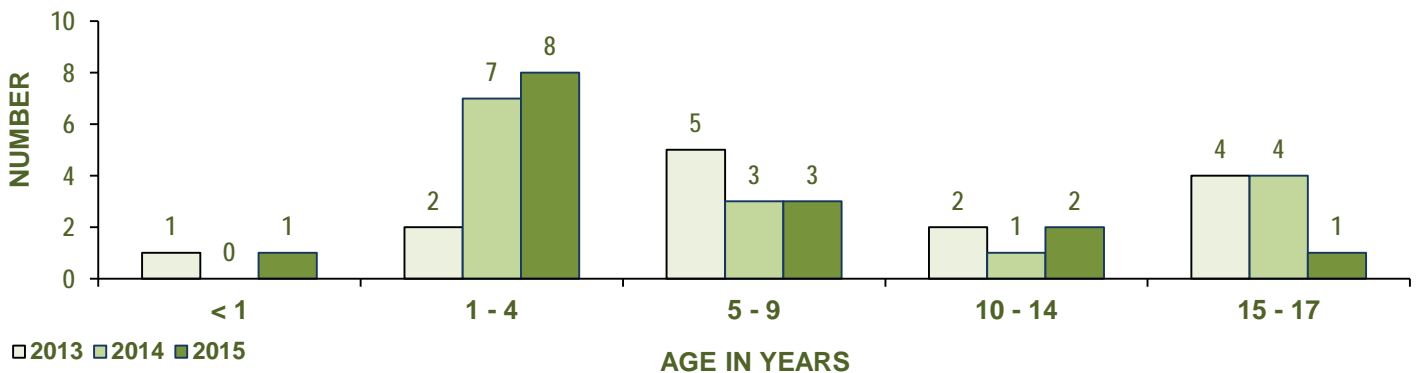
## UNINTENTIONAL DROWNINGS

**In 2015, 15 children drowned in Missouri.**

- Seventy-three percent of the children who died from drowning were age five and under.
- Ninety-one percent of these children were unsupervised at the time of the incident which caused their death.
- In 63% of these drownings, there were no barriers between the child and the place they drowned.
- Six children died in pools or spas; seven in lakes, rivers and ponds; one in a bathtub and one in a livestock watering tank.

Nationally, drowning is the second leading cause of unintentional injury deaths in children ages 1-14 years, in 2014. Of the **15** children who drowned, **nine** (60%) were age four and under and **five** (33%) were ages five to 14.

### DROWNING FATALITIES BY AGE



### DROWNING FATALITIES BY SEX AND RACE

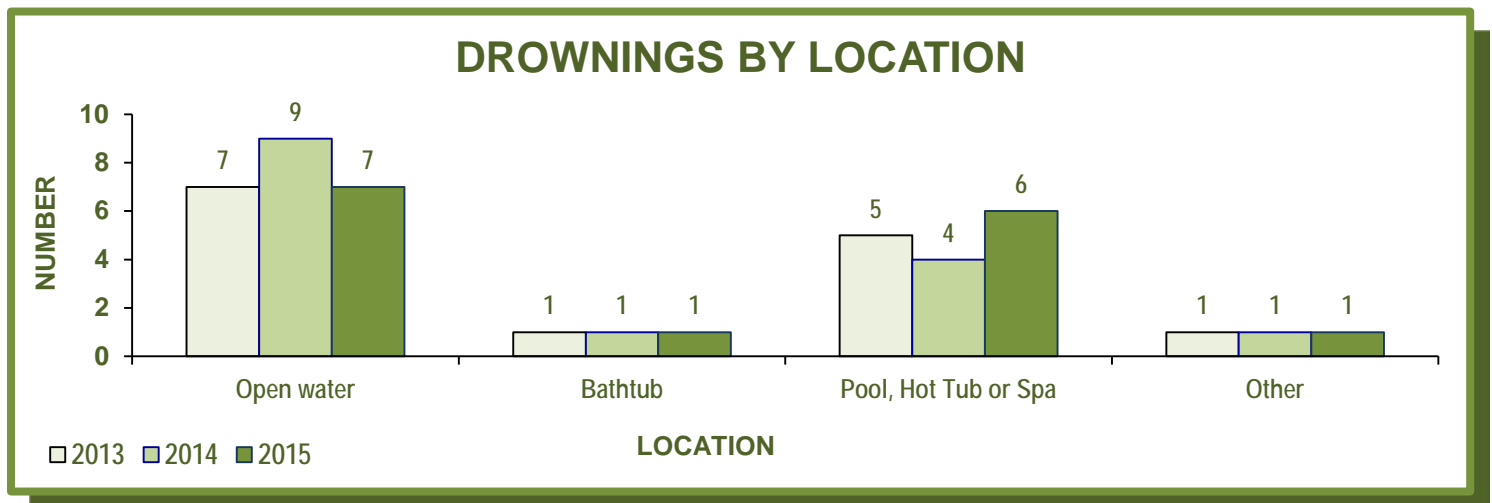
SEX	2013	2014	2015	RACE	2013	2014	2015
Female	4	2	8	White	6	13	11
Male	10	13	7	Black	6	2	2
				Asian	0	0	1
				Multi-Racial	2	0	1
	14	15	15		14	15	15

Most drownings among infants under the age of one occur in bathtubs, while most drownings among children ages one to four occur at pools. Young children can drown in as little as one inch of water; therefore, they are at risk of drowning in wading pools, bath and hot tubs, buckets, diaper pails and toilets. The head of an infant or toddler is disproportionately large and heavy, representing approximately 20% of the total body weight, making them top-heavy and unable to escape when head-first in a toilet or bucket.

Older children are more likely to drown in open water locations such as creeks, lakes and rivers. Of the **15** children who drowned, **six** (40%) occurred in swimming pools, hot tubs or spas, **seven** (47%) occurred in open water locations, **one** (7%) occurred in a bathtub, and **one** (7%) occurred in an “other” location (livestock watering tank).

A drowning can occur quickly and silently in a matter of seconds, and typically occurs when a child is left unattended or there is a brief lapse in supervision. The belief that a drowning victim will make lots of noise while thrashing around in the water, before drowning, is not accurate. So experts say just being in the area, reading a book or a tablet is not enough. Adult supervision needs to be actively looking and listening at all times.

Even good swimmers can drown. A cramp, an injury, or even swallowing water the wrong way when a wave hits someone in the face can cause them to flounder and go under; which is why it is recommended that Coast Guard approved flotation devices such as life vests/jackets be worn when swimming and never swim alone.



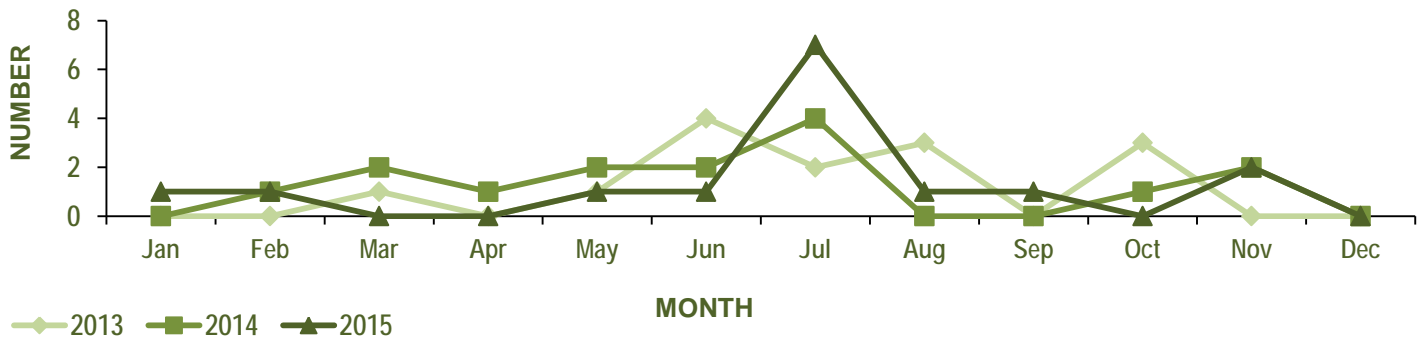
## Drowning Fatalities Among Children

Use of a snug-fitting, age appropriate Coast Guard approved personal flotation device (PDF) life vest/jacket is well established as an effective means to prevent drowning deaths. Type IV PFD throwable personal flotation devices such as ring life buoys or buoyant cushions are for emergency rescues only, and are not acceptable as personal flotation devices for children, especially under the age of seven. Of the drownings investigated and reported by the Missouri State Highway Patrol and data collected from CFRP panels, only **one** of the children who drowned was wearing a personal flotation device.

With the abundance of water recreation areas within the state, warm weather months of May, June, July and August are peak months for drowning in pools and open water.

Walking on ice-covered water is hazardous, as it can take weeks of consistent below freezing temperatures for the ice on a pond or lake to freeze to a safe level of four to six inches thick. With Missouri's changeable weather, this can be hard to achieve. Other factors such as snow cover and whether the water under the ice is moving or still, will also affect the freezing process. **One** child drowned when he fell through the ice on a frozen pond.

## DROWNING FATALITIES BY MONTH



## Prevention Recommendations:

### For parents:

- ✿ Never leave a child unsupervised, even for a minute, in or around water in the home or outdoors.
- ✿ Enroll children in swimming classes and water safety courses.
- ✿ For families with residential swimming pools, install all-sided pool fencing with self-closing and self-latching gates. The fence should be at least four feet tall and completely separates the pool from the house and play area of the yard.
- ✿ Keep children off of frozen ponds and lakes, unless they have been inspected by a knowledgeable adult as to the status of the ice and are under direct adult supervision.
- ✿ Ensure that children always wear appropriate U.S. Coast Guard approved personal flotation devices (life vest/jacket) when near or around open water locations.
- ✿ Learn CPR.

### For community leaders and policy makers:

- ✿ Enact and enforce pool fencing ordinances.
- ✿ Enforce existing regulations regarding the use of personal flotation devices when boating (and swimming) in open water areas.

### For professionals:

- ✿ Parents, as well as children, should receive water safety education, to include discussion of in-home water hazards to children (including buckets, toilets, etc.) and the importance of vigilant supervision.
- ✿ Facilitate CPR training for parents of small children.

### For child fatality review panels:

- ✿ Promote public education about drowning hazards to children and strategies to prevent drowning.

## UNINTENTIONAL POISONINGS

**In 2015, 11 children died of unintentional poisoning.**

- ✱ Sixty-three percent of the teens who died of unintentional overdoses had a prior history of substance abuse.
- ✱ Fifty percent had stressors in their lives such as school or legal problems, or were victims of abuse and/or neglect.
- ✱ Eighty-eight percent were male and 88% were white.
- ✱ Eighty-eight percent died of overdoses of intoxicants (both legal and illegal). One teen died from over-the-counter medication taken to relieve the symptoms of drug detox.
- ✱ Thirty-eight percent of these teens were Medicaid eligible.

A poison is a substance that is harmful to the body when ingested, inhaled, injected or absorbed through the skin. Children are at risk of poisoning from household and personal care products, medications, vitamins, indoor plants, lead and carbon monoxide.

Death rates from poisoning overall have decreased, but the percentage of deaths due to medications has increased. Medications now account for all poisoning deaths. In children under age five, unintentional medication overdoses caused by unsupervised accidental. **One** child under age five died of oxycodone intoxication from his grandfather's pills, and **one** child under age five died of methadone intoxication.

The Missouri Poison Center is an informational resource and provides statewide service 24-hours a day, 7-days a week, professionally staffed by nurses, pharmacists and physicians who are prepared to assist with exposures in all age groups. It is free service to the public and can be accessed, either on the internet at <http://www.cardinalglennon.com/Pages/missouri-poison-center.aspx>, or toll free at **1-800-222-1222**.

### POISONING FATALITIES BY AGE



### POISONING FATALITIES BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	3	4	1	White	7	7	8
Male	6	8	10	Black	2	2	3
	9	9	11		9	9	11

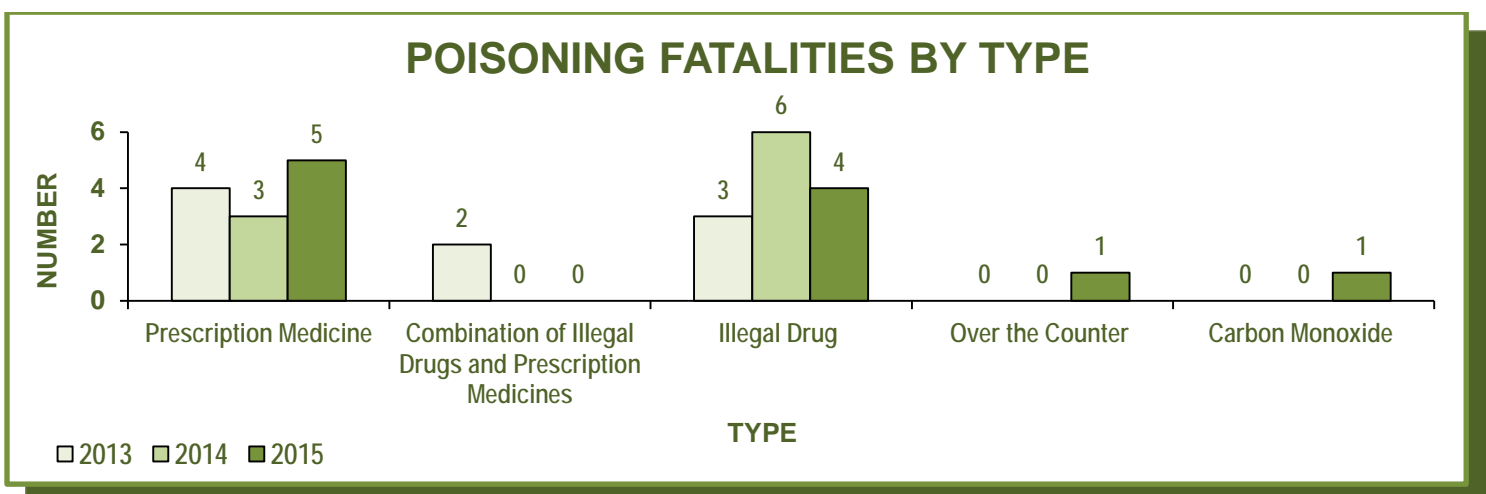
Illicit drug use starts within the junior high school ages and increases through high school age. By the time students are seniors, the rate of illicit drug use has climbed to almost 25%. The pattern for alcohol use is similar and by the time students are seniors, the rate of alcohol use has reached an alarming 50%. Research tells us that the brain is still developing during adolescence, particularly in those areas that control decision making. As these are vulnerable years for children, parents and other adults need to be not only familiar with, but also watch out for warning signs of drug and/or alcohol abuse, so they can provide intervention that not only addresses addiction, but can also save the child's wellbeing and/or life.

**Nine** teens, ages 13-17, died of unintentional poisoning in 2015, **four** died from illegal drugs, **three** died from prescription medications, **one** died from an over-the-counter medication and **one** from carbon monoxide in the home.

With the increased scrutiny of the prescription of pain medications the price has gone up and many addicts are turning to cheaper and easier to get street drugs. **Four** (36%) of the **11** children who died from poisoning, died from either heroin or designer drugs. Other addicts are turning to loperamide, the active ingredient in Imodium and other anti-diarrhea medications. Loperamide is an opioid which taken in recommended doses is safe and only reacts with the receptors in gastrointestinal tract, but in high doses it can ease opioid withdrawal symptoms or even cause euphoria. **One** child died in 2015 from loperamide poisoning for relief of detox symptoms.

Missouri is currently the only state which does not keep a prescription drug database. This type of database is how the other 49 states identify people who acquire excess prescriptions for addictive painkillers and tranquilizers, as well as the physicians who overprescribe them. This lack not only makes it difficult for Missouri to combat prescription drug abuse, but also attracts people from neighboring states who wish to make untracked purchases. These monitoring systems track opioid painkillers (such as oxycodone and hydrocodone) and tranquilizers (such as Xanax and Valium). **Five** (45%) of the **11** children who died of accidental poisoning in Missouri died from one of these type of drugs.

Again in 2015, a child died from the use of so-called "designer drugs." Created to try and get around national drug laws, these compounds are sold under such misleading names as "herbal incense," "potpourri," "bath salts," "plant food," and "research chemicals," and are formulated to produce effects similar to marijuana, LSD or methamphetamines. Testing has found that the chemical composition of these drugs vary greatly, even within two products that carry the same name, making the effects unpredictable and increasing the danger of overdose. In 2015, **one** child died from snorting a combination of APB and MAPB, which are psychoactive drugs in the same family as ecstasy.





## Prevention Recommendations:

### For parents:

- ✿ Educate themselves and their teens about risks associated with abuse of prescription and over-the-counter drugs.
- ✿ Follow prescription medication directions carefully.
- ✿ Properly discard old or unused medications. Many pharmacies participate in a program to help safely dispose of unwanted medications. A list can be found at [www.disposemy meds.org](http://www.disposemy meds.org).
- ✿ Utilize recommended in-home disposal processes, <http://dnr.mo.gov/pubs/pub2291.pdf>.
- ✿ Keep all medications where they are not readily accessible by children.
- ✿ Keep contact information for Poison Control (1-800-222-1222) and emergency services readily available.

### For community leaders and policy makers:

- ✿ Advocate for mandatory child-resistant packaging on all hazardous drugs and household products.
- ✿ Pass and enforce laws, ordinances or regulations for carbon monoxide detector use.
- ✿ Create programs to assist pregnant women in getting off the drugs before they harm their child.
- ✿ Pass legislation to create a database to track the sales and prescriptions of the most commonly abused drugs, and mandate that doctors and pharmacists enter all prescriptions into this database. Also, require that all prescribers conduct the patient prescription history before prescribing additional medications.

### For professionals:

- ✿ Increase public education about the hazards to children regarding prescription and over-the-counter medications.
- ✿ Reduce the number of hazardous prescriptions available to children by monitoring the number and/or amount of painkillers being prescribed.
- ✿ Make sure that all patients have information on the proper disposal of unneeded medications.

### For child fatality review panels:

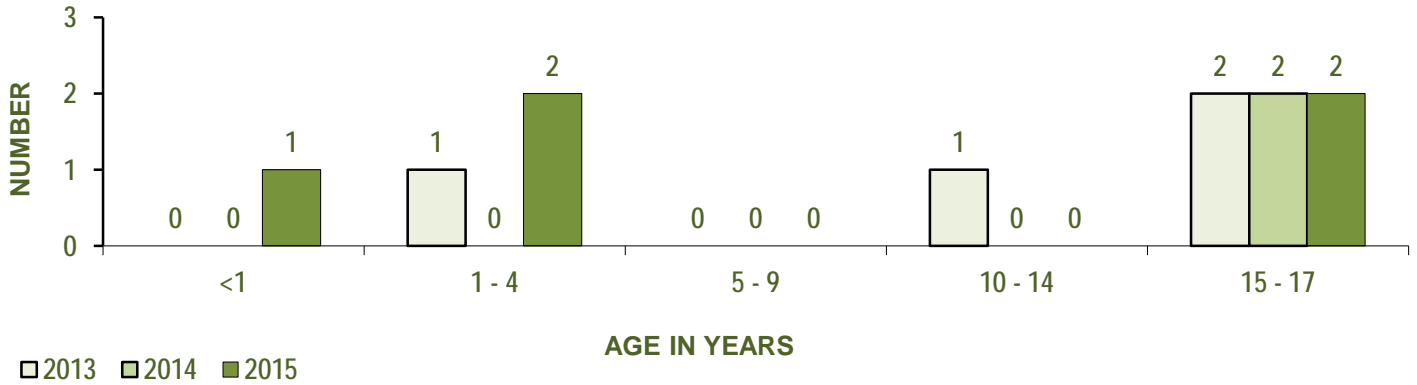
- ✿ Promote public education about the hazards of prescription and over-the-counter medications.
- ✿ Promote public education on proper disposal of unused or unneeded prescription medication.

## UNINTENTIONAL FIREARM FATALITIES

**In 2015, five Missouri children died of unintentional firearm injuries.**

- ✿ Sixty percent of the unintentional firearm deaths happened to children three years of age or younger.
- ✿ In all of the deaths, a loaded handgun was left where the child could easily find it; i.e. under a sofa cushion, on a shelf, on a headboard and in an accessible unlocked cabinet.
- ✿ The average age of the supervising parent was 23-years old.
- ✿ In two deaths, the child found the gun and shot themselves; in one, the child's five-year-old sibling found the gun and shot the child while playing with the gun.

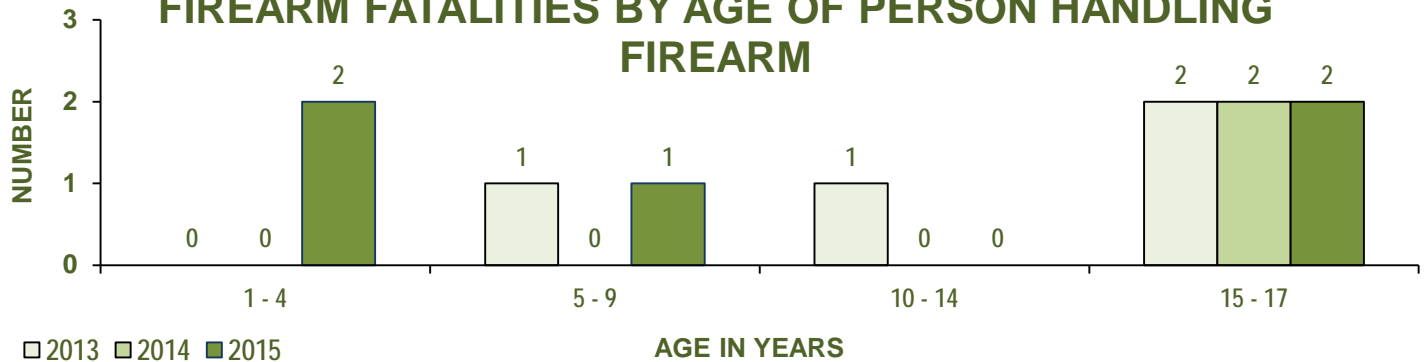
## FIREARM FATALITIES BY AGE



## FIREARM FATALITIES BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	1	0	2	White	3	2	3
Male	3	2	3	Black	1	0	2
	4	2	5		4	2	5

## FIREARM FATALITIES BY AGE OF PERSON HANDLING FIREARM



In the United States, males are far more likely to be injured and die from unintentional shootings than females. **Four** of the victims of unintentional shootings were males. **Four** of the **five** unintentional firearm deaths among children involved a handgun, and **one** was listed as unknown, and all of the weapons were owned by family members. Three of these weapons were stored loaded and unsecured, one was being loaded and unloaded by the child who accidentally shot himself and the last one was listed as unknown.

Parents need to store their guns safely, preferably unloaded and inaccessible to children.

- Most unintentional childhood firearm deaths involve guns kept in the home that have been left loaded, safety off and accessible to children.
- Unintentional firearm deaths among children most often occur when children are unsupervised and out of school.

Many parents have unrealistic expectations of their children's capabilities and behavior around guns:

- ✿ Nearly two-thirds of parents with school-age children believe that the firearm(s) in the home are safe from their children. Even many younger children know where the gun is kept.
- ✿ Few children, age eight or younger, can reliably distinguish between real and toy guns, or fully understand the consequences of their actions.
- ✿ Many children who found and handled a gun, or pulled the trigger, reported having some previous type of firearm safety instruction.
- ✿ It is estimated that safety devices such as gun locks and load indicators, prevent more than 30% of all unintentional firearm deaths.
- ✿ Toy guns must conform to marking requirements under the U.S. Department of Commerce regulation.

## **Prevention Recommendations:**

### **For parents:**

- ✿ Parents who own guns should always store firearms unloaded and locked up, with ammunition locked in a separate location, out of children's reach, use gun locks, load indicators and other safety devices on all firearms.
- ✿ All parents should teach children never to touch a gun and tell an adult, if they find one.
- ✿ Parents should enroll children 11-years old or older, in hunter safety and/or firearms educational courses.

### **For community leaders and policy makers:**

- ✿ Enact laws outlining owner liability for harm to others, caused by firearms.
- ✿ Enact and enforce laws requiring that new handguns be designed to minimize the likelihood of discharge by children.
- ✿ Enforce laws and ordinances that restrict access to and decrease availability of guns.

### **For professionals:**

- ✿ Implement gun safety education. It is important to include public education about the hazards of firearms, as one component of an overall effort to reduce the incidence of firearm injuries and deaths.

### **For Child Fatality Review Panels:**

- ✿ In all cases of firearm deaths involving children, ensure that every effort is made to determine the source of the gun, circumstances of the event, consider the responsibility of the gun owner in the incident and promote firearm safety within the local community.

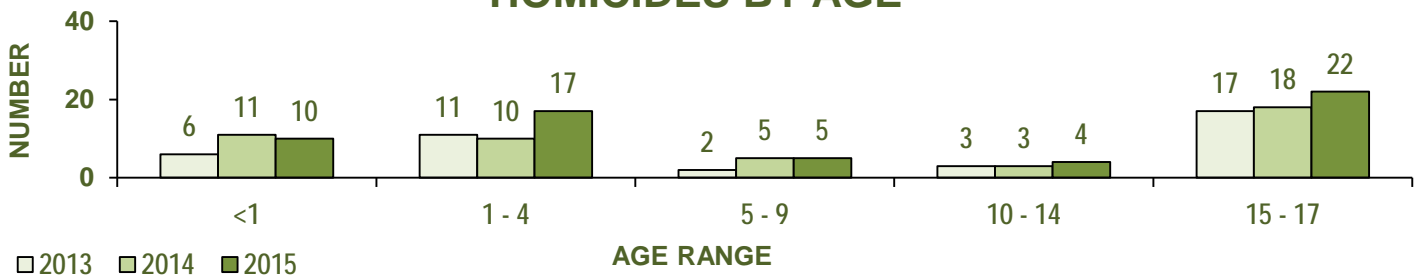
## HOMICIDES

In 2015, homicide was listed as the death certificate manner of death for 58 Missouri children.

**Fatal Child Abuse and Neglect:** Child death resulting directly from inflicted physical injury and/or grossly negligent treatment by a parent or caretaker, regardless of motive or intent. This includes, but is not limited to, children whose deaths were reported as homicide by death certificate. A total of **64** children were identified by CFRP panels, as victims of Fatal Child Abuse and/or Neglect; of those, **31** were reported by death certificate as Homicide, with **27** being considered "Child Abuse."

**Other Homicides:** Child death in which the perpetrator was not in charge of the child, was engaged in criminal or negligent behavior, and the child may or may not have been the intended victim. These homicides include teen violence and events such as motor vehicle deaths involving drugs and/or alcohol. There were **31** such fatalities. Of those, the CFRP panels identified **four** child deaths in which parental negligence was a contributing factor.

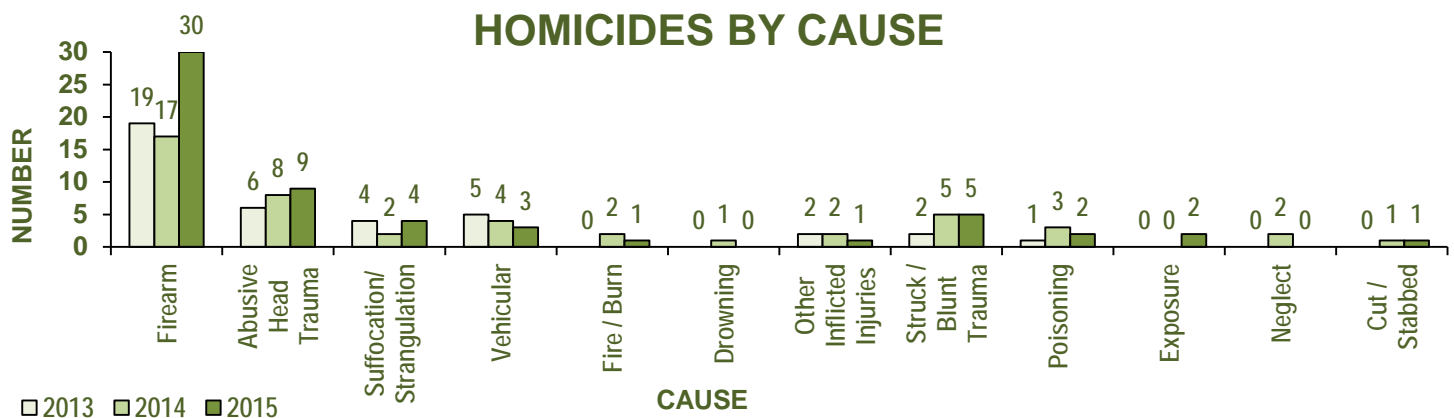
### HOMICIDES BY AGE



### HOMICIDES BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	14	19	20	White	15	23	29
Male	25	28	38	Black	22	21	26
				Multi-Racial	2	3	3
	39	47	58		39	47	58

### HOMICIDES BY CAUSE



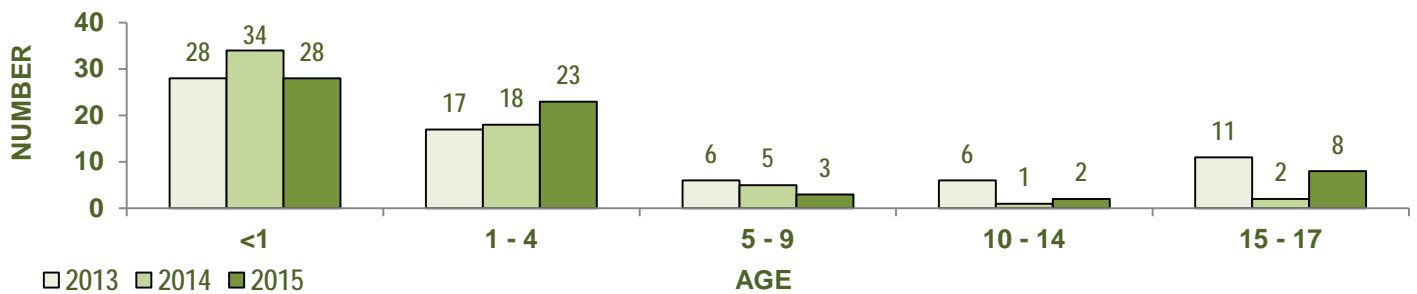
## FATAL CHILD ABUSE AND NEGLECT

In 2015, 64 Missouri children were victims of Fatal Child Abuse and Neglect, of which, 31 were reported as homicide by death certificate.

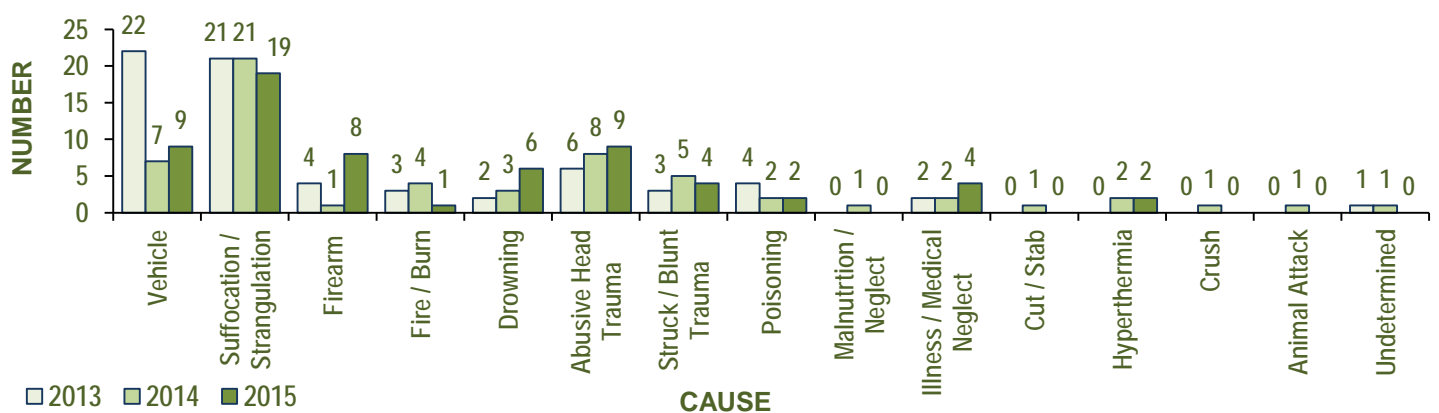
### CHILD ABUSE AND NEGLECT FATALITIES BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	28	36	25	White	44	35	33
Male	40	24	39	Black	21	22	26
				Multi-Racial	3	3	5
	68	60	64		68	60	64

### CHILD ABUSE AND NEGLECT FATALITIES BY AGE



### CHILD ABUSE AND NEGLECT FATALITIES BY CAUSE



Child fatalities are the most tragic consequences of child abuse and neglect. It is well documented that child abuse and neglect fatalities have been under-reported, both nationally and in Missouri. Properly organized and functioning child fatality review systems have improved the accuracy of child death reporting.

There are three entities within state government responsible for child fatality information: the Department of Health and Senior Services' Bureau of Vital Statistics, the Department of Social Services, Children's Division and the Child Fatality Review Program. All three exchange and match child fatality data in order to ensure accuracy throughout the systems. However, the Bureau of Vital Statistics,

Children's Division and the Child Fatality Review Program serve very different functions and, therefore, different classifications and timing periods apply, when child fatality data is reported.

## Vital Statistics and Death Certificate Information

A death certificate is issued to serve as legal documentation that a specific individual has died, but not as legal proof of the cause of death. It also provides information for mortality statistics that may be used to assess the state's health, causes of morbidity and mortality, and developing priorities for funding and programs that involve public health and safety issues.

Death certificate information is widely recognized as an inadequate single source for identification of child abuse and neglect deaths, due to inadequate scene investigation or lack of autopsy, inadequate investigation by law enforcement or child protection, misdiagnosis by a physician, or coroner determination of cause. Child abuse and neglect fatalities often mimic illness and accidents, and neglect deaths are particularly difficult to identify, because negligent treatment often results in illness and infection that can be attributed to natural causes.

## Children's Division: Child Abuse/Neglect Fatalities

The Department of Social Services, Children's Division is the hub of Missouri's child protection community. The Children's Division provides a multi-response system for addressing each report of child abuse and neglect received by the Child Abuse/Neglect Hotline Unit (CANHU). Their responsibilities are limited to reports that meet the legal definition of child abuse and neglect, stipulated in RSMo. 210.110, for children under the age of 18, for whom the perpetrator has care, custody and control.

Since 2000, all child deaths are to be reported to the CANHU and by statute, are specifically mandated to be brought to the attention of the division by the coroner or medical examiner. A fatality report is taken and, when appropriate, the report is accepted for investigation of child abuse and neglect by the division, who is also responsible for protecting any other children in the household, to include removal by order of the court, if applicable, until the investigation is complete and their safety can be assured. The CFRP is also immediately notified by the Children's Division Central Registry Unit of all reported fatalities.

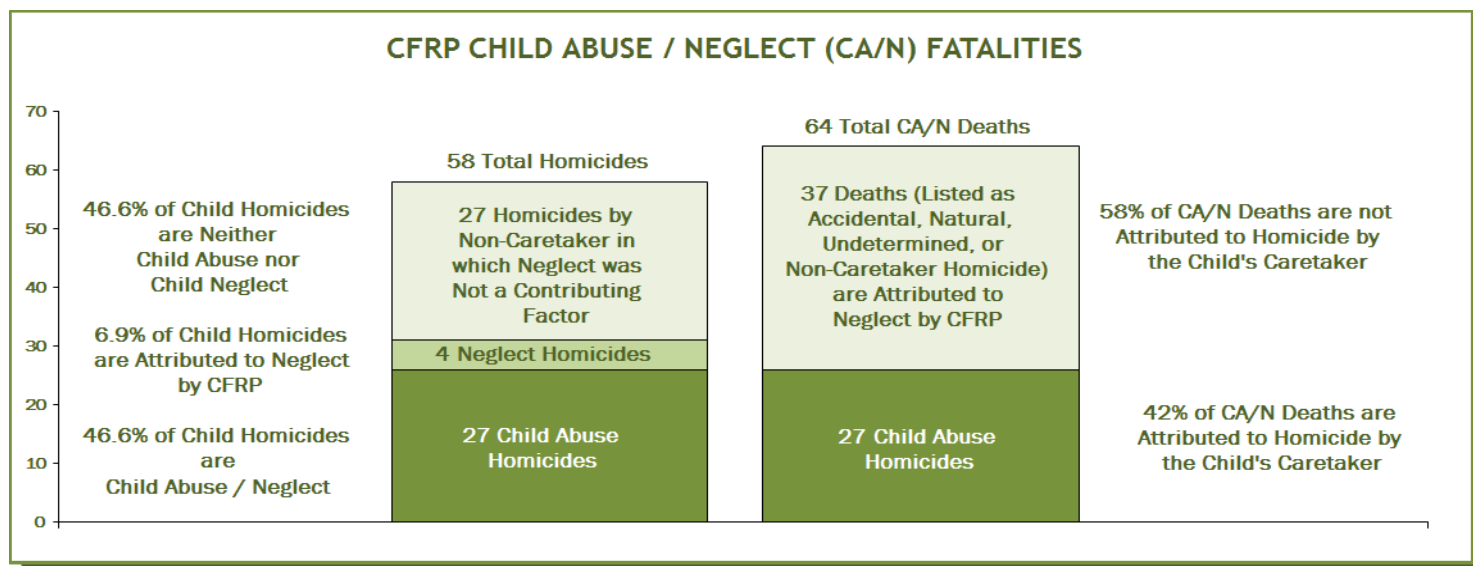
Investigations are classified as *preponderance of evidence child abuse and neglect*, when there is sufficient evidence to prove that a child who died was abused or neglected, or when the finding is court-adjudicated. An example would be an unsupervised toddler who was run over in the driveway of her home. That death would be included as a pedestrian fatality in this CFRP Annual Report, with Inadequate Care as a contributing factor. In incidents, Children's Division may determine that there was a *preponderance of evidence* to believe that this child was the victim of neglect, specifically lack of supervision.

## Missouri Child Fatality Review Program: Fatal Child Abuse and Neglect

Child fatalities represent the extreme of all issues that have a negative impact on children. Over the years, research discovered that many fatal child injury cases were inadequately investigated as many children were not only dying from common household hazards due to inadequate supervision, but also from undetected fatal abuse and neglect misclassified as natural deaths, accidents or suicides. Additionally, information necessary for a thorough investigation of a child death was distributed among agencies, which could not share records. In 1992, Missouri initiated a comprehensive, statewide child

fatality review program which has resulted in better investigations, more timely communication, improved coordination of provision of services and prevention efforts, training and technical assistance, and standardized data collection that allows us to understand much more about how our children die, the circumstances in which they die and who, if anyone, may be responsible.

The Child Fatality Review Program defines Fatal Abuse and Neglect as child deaths resulting directly from inflicted physical injury and/or grossly negligent treatment by a parent or caretaker, regardless of motive or intent. This number includes, but is no longer limited to, children whose deaths were reported as homicide by death certificate; their death certificate manners of death may include natural, accident or undetermined.



## FATAL CHILD ABUSE: INFLICTED INJURY

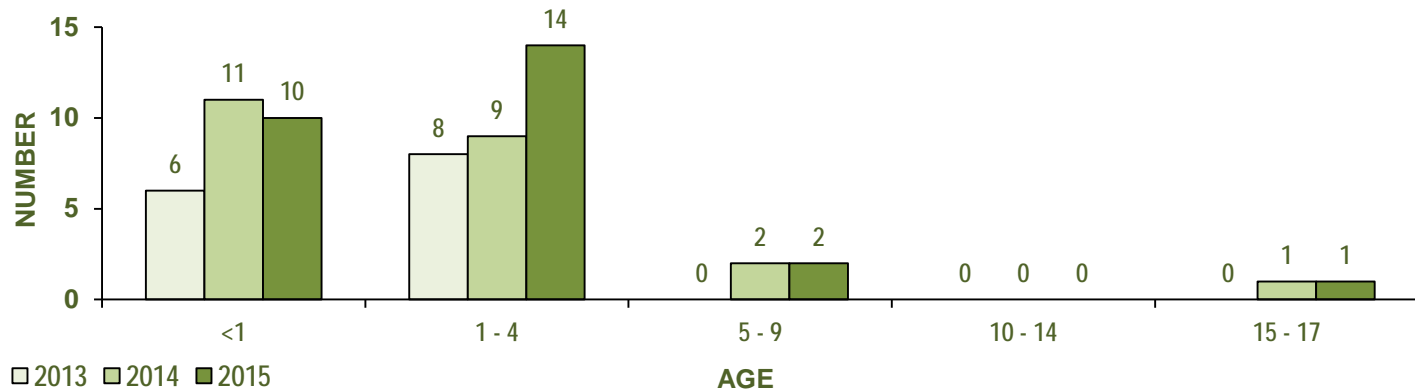
In 2015, 27 Missouri children died from inflicted injury at the hands of a parent or caretaker.

- ✱ Thirty-three percent of the children who died at the hands of their guardian or caretaker had a prior history of maltreatment.
- ✱ There was an open CPS case on 26% of the children who died from fatal child abuse.
- ✱ Eighty-nine percent of these children were covered by Medicaid.
- ✱ There were prior or current parental domestic dispute issues, such as a contested divorce or domestic violence in 26% of these cases.

Fatal child abuse may involve repeated abuse over a period of time, as in battered child syndrome, or it may involve a single, impulsive incident, such as drowning, suffocation or abusive head trauma. Infants and younger children are more vulnerable to die from abuse and neglect due to their dependency, small size and inability to defend themselves. In 2015, **24** of the **27** Missouri children (89%) who died from inflicted abuse or neglect at the hands of a parent or caretaker were four years of age or younger. Of those, **ten** (38%) were infants under the age of one year.



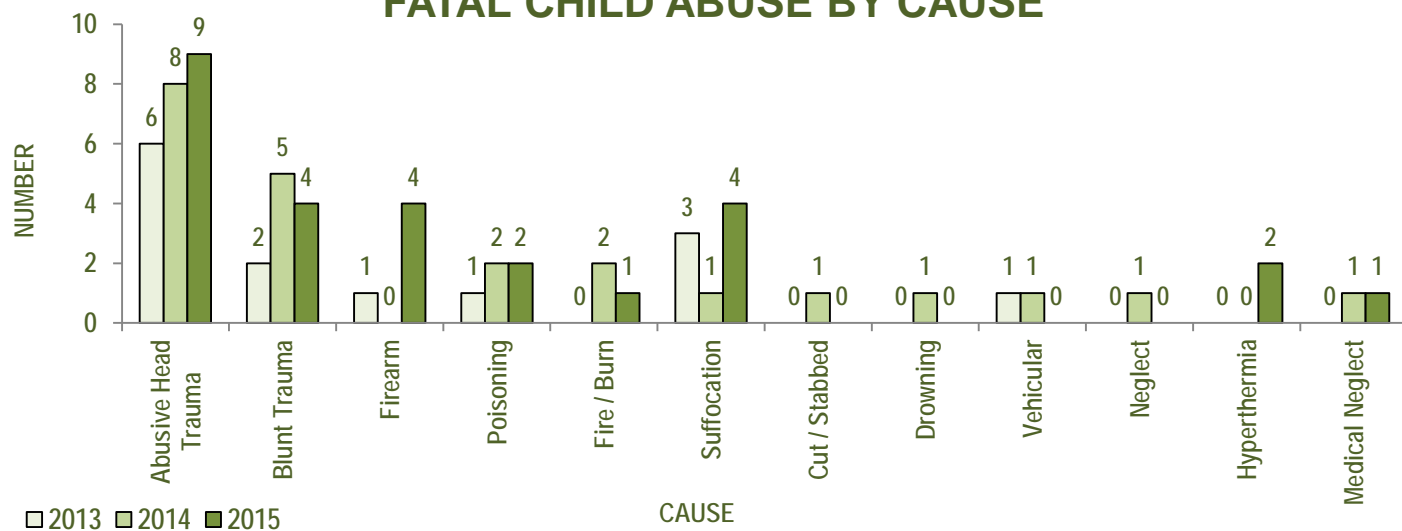
## FATAL CHILD ABUSE BY AGE



## FATAL CHILD ABUSE AND NEGLECT BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	7	11	10	White	8	13	18
Male	7	12	17	Black	5	7	7
				Multi-Racial	1	3	2
	14	23	27		14	23	27

## FATAL CHILD ABUSE BY CAUSE



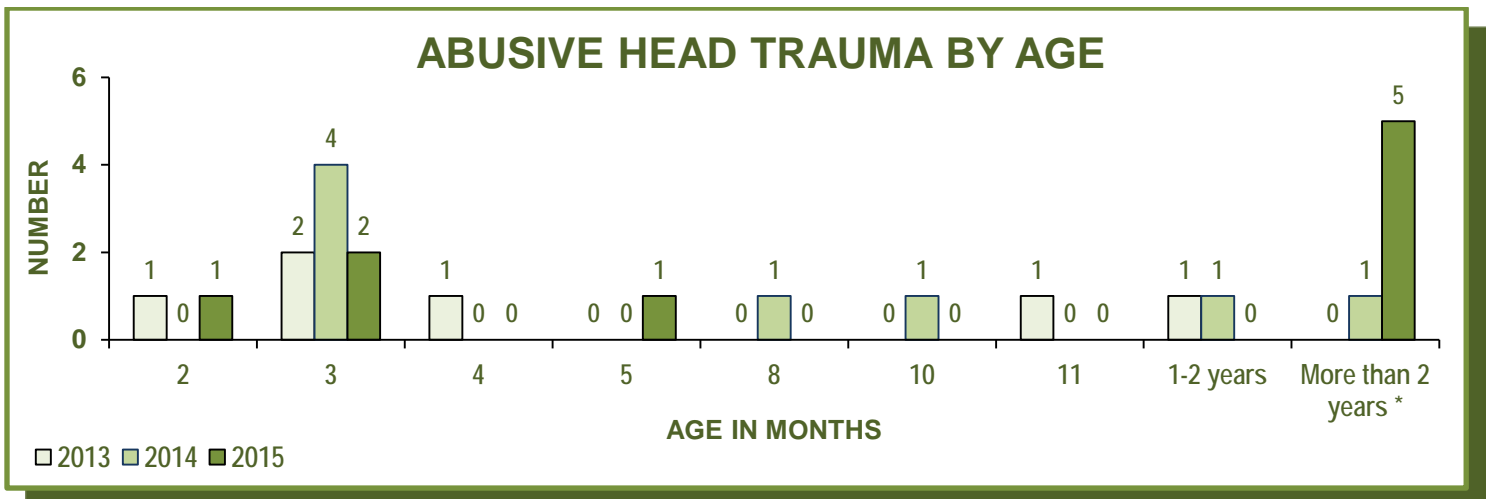
**Four** children died of blunt trauma injuries to the abdomen or chest when they were struck, punched, kicked or thrown by a parent or caretaker. Infants and young children are especially vulnerable because vital organs are in close proximity to each other; the ribs are small and cannot protect vital internal organs. Blunt trauma to the chest and abdomen can result in massive internal injuries and bleeding.

## Abusive Head Trauma

Of the **27** Missouri children who died from inflicted injury at the hand of a parent or caretaker in 2015, **nine** (38%) were victims of abusive head trauma, formerly known as Shaken Baby Syndrome.

Pediatric abusive head trauma is defined as an injury to the skull or intracranial contents of an infant or young child under five years of age, due to inflicted blunt impact and/or violent shaking. The signs and symptoms that a child exhibits after having been subjected to this kind of trauma range from minor (irritability, lethargy, tremors, vomiting) to major (seizures, coma, stupor, death), which are caused by neurological changes related to destruction of brain cells secondary to trauma, lack of oxygen to the brain cells and swelling of the brain. Extensive retinal hemorrhages in one or both eyes are found in the vast majority of these cases.

Not all abusive head injuries are fatal. According to Dr. Mary Case, St. Louis County Medical Examiner and Forensic Pathologist, who has conducted significant research on the topic, seven to 30% of children who suffer abusive head injuries die, 30-50% suffer significant cognitive or neurological deficits and 30% may recover. Data also indicates that babies who appear well at discharge may show evidence of cognitive or behavioral difficulties later on, possibly by school age.



\* In 2015, two children died from abusive head trauma injuries they sustained in 2011.

## ABUSIVE HEAD TRAUMA BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	4	5	3	White	5	5	5
Male	2	3	6	Black	1	2	4
				Multi-Racial	0	1	0
	6	8	9		6	8	9

For abusive head injuries, the average age of victims is between three and eight months, although these injuries are occasionally seen in children up to four-years old. Infants are particularly vulnerable to abusive head trauma injuries, because of their unique physical and behaviors characteristics. Physically, infants' heads are large and heavy in proportion to their body weight and their neck muscles are too weak to support such a disproportionately large head. Also, because infants' brains are immature, they are more easily injured. When an infant is shaken, the head rotates wildly on the axis of

the neck creating multiple forces within the head, which lead to tearing of veins and arteries. **Four** (44%) of the **nine** children who died from abusive head trauma were under one year of age. The two oldest children were shaken as infants and died later from their injuries.

Young parents, unstable family conditions, low socioeconomic status and disability or prematurity of the child make an infant particularly vulnerable. The triggering event for abusive head trauma is almost always the baby's crying and loss of control by the caregiver. Research has found that the amount of crying in infants does tend to increase on a daily basis, starting at about one to two weeks, getting worse for up to two to three months and then starts to decline. While some babies cry more than others, all infants go through this same pattern. This is known as the "period of **PURPLE** crying, "**Peak** of Crying." It **Peaks**, is often **Unexpected**, **Resists** soothing, the child looks like they are in **Pain**, is **Long** lasting with an average of 35-40 minutes at a time, but can last up to two hours and it tends to happen more in the late afternoon or **Evening**. None of the nine children who died of abusive head trauma have a triggering event, possibly due to the lack of cooperation from the perpetrator.)

Nationally, perpetrators of abusive head trauma are more often male, with birth fathers accounting for the majority, followed by mothers, and mother's boyfriends.

Perpetrators of abusive head trauma fatalities in Missouri included **seven** birth fathers, **one** male fiancé of child's foster mother and **one** female fiancé of child's father. In two of these instances, the child was injured in 2011 and survived for four years until succumbing to their injuries.



## Fatal Child Neglect: Inadequate Care and Grossly Negligent Treatment

The majority of unintentional fatalities and serious injuries among young children are the result of a temporary lack of supervision or inattention at a critical moment. This is often the case when infants and toddlers drown in bathtubs and swimming pools, or young children dart in front of moving vehicles. Parents and other caretakers often underestimate the degree of supervision required by young children. This is complicated by the mistaken idea that young children have some sort of innate fear of dangerous situations.

Negligent treatment of a child is an act of omission, which can be fatal when due to gross inadequate physical protection, withholding nutrition or health care necessary to preserve life. Child deaths resulting from grossly negligent treatment are frequently difficult to identify, because neglect often results in illnesses and infections that can be attributed to natural causes, exposure to hostile environments or circumstances that result in fatal "accidents."

Definitions of negligent treatment vary depending on whether one takes a legal, medical, psychological, social services or lay perspective. There are broad, widely recognized categories of neglect that include: *physical*, *emotional*, *medical*, *mental health*, and *educational*. Within those definitions, there are subsets, as well as variations in severity that often include *severe*, *near fatal* and *fatal*. Negligent treatment may or may not be intentional; however, the end result for the child is the

same whether the parent is willingly neglectful or neglectful due to factors such as ignorance, depression, overwhelming stress and inadequate support.

Grossly negligent treatment by a parent or caretaker generally involves failure to protect from harm and withholding or otherwise failing to provide supervision, food, shelter, or medical care necessary to meet the child's basic needs. This level of negligence is egregious and surpasses momentary inattention or a temporary condition; it is often part of a pattern of negligent treatment. Child fatalities often result when a parent or caretaker fails to adequately supervise the child, usually for extended periods of time. In some cases, failure to protect from harm or failure to meet basic needs, involves exposure to a hostile environment or hazardous situation with potential for serious injury or death; i.e., a child less than one-year old left unattended in a bathtub with water running; or small children unrestrained while riding in a vehicle driven by an intoxicated parent.

Medical neglect refers to failure to provide prescribed medical treatment or emergency medical care for a known illness or injury with potential for a serious or fatal outcome; i.e., untreated diabetes or asthma.

Total Child Fatalities	Cause	*Gross Negligent Treatment that Contributed to the Fatality				Examples
		Poor/ Absent Supervision	Child Neglect	Other Negligence	Other	
6	Drowning	5	1	0	0	One infant died when left in a bathtub with only a five-year-old to supervise her. Three toddlers drown when two were left unsupervised and later found in the pool, and one was left alone unsupervised playing in a pool. One toddler fell into a pond and another fell into a livestock watering tank, both were unsupervised for an extended period.
4	Firearm	2	1	0	1	Two children died when loaded handguns were left within their reach. One child died in a retaliatory drive by shooting against his parent, and one child died when two teenagers were allowed to play with guns in the home.
3	Illness/ Natural Cause	1	0	1	1	One child died from prematurity due to mother's drug use and lack of prenatal care. Two children died from pneumonia due to medical neglect.
15	Suffocation	1	0	13	1	Eleven infants died while sharing a sleep surface with their parent(s). Two infants died due to unsafe sleep arrangements with soft bedding. One infant died when he fell between the mattress and footboard of an adult bed and became wedged. One child died when she accidentally hung herself and the supervisor delayed checking on the child after being notified.
9	Vehicular	2	0	5	2	One child died when while operating an ATV unsupervised, he rolled it over on top of himself. One child died when his father backed over her in a driveway. Four children died from accidents caused by excessive speed; two teens died in the commission of separate auto thefts - one was a passenger in a stolen vehicle that crashed, and one was the driver and lost vehicle control during a police chase. One child died because of an accident caused by a drunk driver in another vehicle.
Total Child Neglect Deaths = 39		11	2	19	5	

As part of the review process, CFRP panels are asked to consider and designate all child fatalities in which Inadequate Care and/or Gross Negligent Treatment had contributed to the death of the child. CFRP panels found that Gross Negligent Treatment contributed to the deaths of **64** Missouri children; of those **31** were designated as Homicide by death certificate – **27** were discussed in **Fatal Child Abuse**. The **four** remaining homicides are included in the **Other Homicides** section. For data purposes, all fatal child neglect deaths are included in the appropriate data section, **Natural Causes**, **Unintentional Injury**, **Homicide** or **Suicide**.

## Prevention Recommendations:

### For parents:

- ✱ Report child abuse and neglect (**1-800-392-3738**).
- ✱ Seek crisis help through the Parental Stress Helpline (**1-800-367-2543**) or ParentLink (**1-800-552- 8522**).

### For community leaders and policy makers:

- ✱ Support and fund home-visitation, child abuse prevention programs that assist parents.
- ✱ Enact and enforce laws that punish those who harm children.

### For professionals:

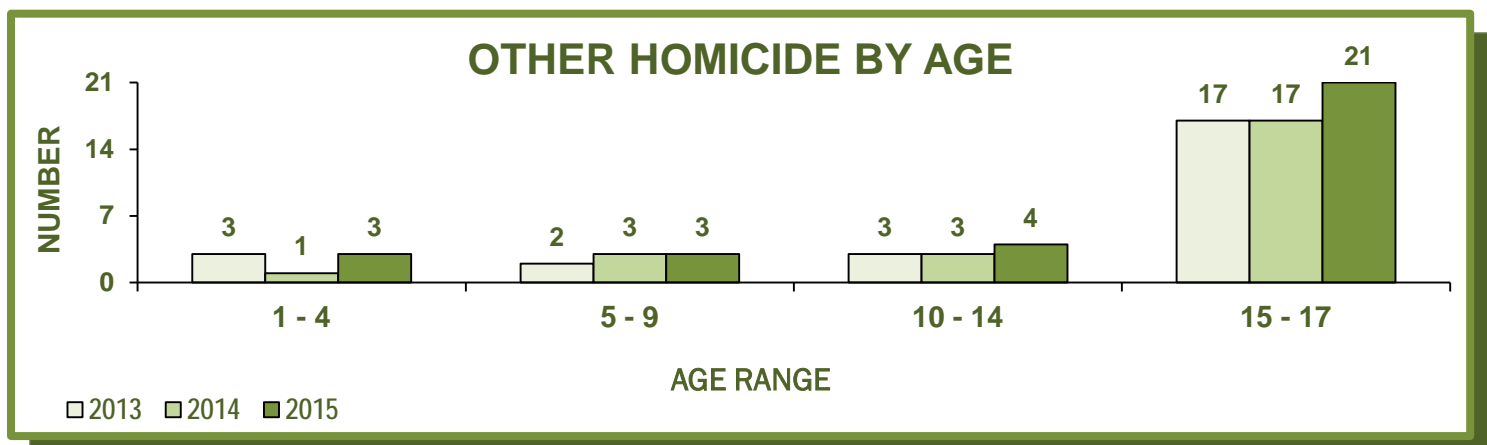
- ✱ Support and facilitate public education programs that target male caretakers and child care providers.
- ✱ Expand training on recognition and reporting of child abuse and neglect.
- ✱ Support development and training for multidisciplinary teams to investigate child abuse.

### For Child Fatality Review Panels:

- ✱ The role of the CFRP panel is critical in identifying fatal child abuse, protecting surviving children and ensuring that the family receives appropriate services. CFRP panels provide important data and enhance our ability to identify those children who are most likely to be abused and intervene before they are harmed.

## OTHER HOMICIDES

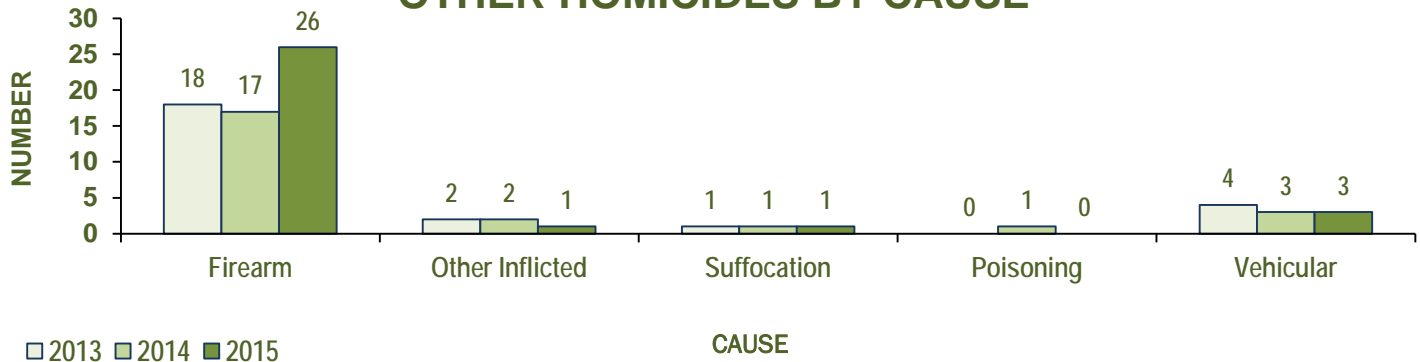
Of the 58 child homicides in Missouri in 2015, 31 (53%) involved perpetrators who were not in charge of the child; engaged in criminal or negligent behavior; or the child may or may not have been the intended victim; of those 27 (87%) involved firearms.



## OTHER HOMICIDES BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	7	8	10	White	7	10	11
Male	18	16	21	Black	17	14	19
				Multi-Racial	1	0	1
	25	24	31		25	24	31

## OTHER HOMICIDES BY CAUSE



**Thirty-one** deaths were related to youth violence. Additionally, **eight** deaths were caused by the victim being involved in harmful behaviors which put them at risk, such as gang membership, illegal activities or involvement with drugs. Research on youth violence has increased understanding of factors that make some populations more vulnerable to victimization and perpetration. Risk factors contribute and increase the likelihood that a young person will become violent; however, risk factors are not direct causes of youth violence.

## Violence Prevention Recommendations:

### For parents:

- ☀ Provide supervision, support and constructive activities for children and adolescents in the household.
- ☀ Access family therapy and parenting assistance, for help with anger management skills, self-esteem and school problems, as necessary.

### For community leaders and policy makers:

- ☀ Support the implementation of violence prevention initiatives.
- ☀ Encourage programs that provide support, education and activities for youth.
- ☀ Support legislation that restricts access to guns by children and adolescents.

### For professionals:

- ☀ Support and implement crisis interventions and conflict resolution programs within the schools.

### For child fatality review panels:

- ☀ Ensure that support is available for victims and survivors of youth violence.
- ☀ Support proactive approaches to crime control, especially those programs that include efforts to confiscate illegally carried firearms.

## SUICIDES

**In 2015, 36 Missouri children committed suicide.**

- ✿ Forty-two percent of the children who committed suicide had a history of mental health services or medication.
- ✿ Sixty-four percent of these children had recent personal crisis.

According to Missouri Department of Mental Health, for over a decade the suicide rate in Missouri has been higher than the national rate. In 2013, Missouri's suicide rate was 15.88 per 100,000, compared to the national rate of 13.02 per 100,000. While that number is for the entire population, in 2014, there was a significant increase in child suicides, 17 and under. In 2015, **36** children died of self-inflicted injuries; **26** were ages 15-17; and the remaining **10** were children ages 10-14.

The 2013 Missouri Student Survey found that 14.2% of all Missouri high school students and 18.6% of female high school students reported they seriously considered suicide. It also stated that 14.3% of all students actually made a suicide plan. Many more students attempt suicide than those that succeed, 6.9% of the students surveyed stated they had attempted suicide. The suicide attempt rate for females ages 15-24 was more than double the rate for all Missourians, but more males succeed than females. Overall, males took their lives at nearly three times the rate of females, representing 76% of all suicides in Missouri.

### SUICIDES BY AGE



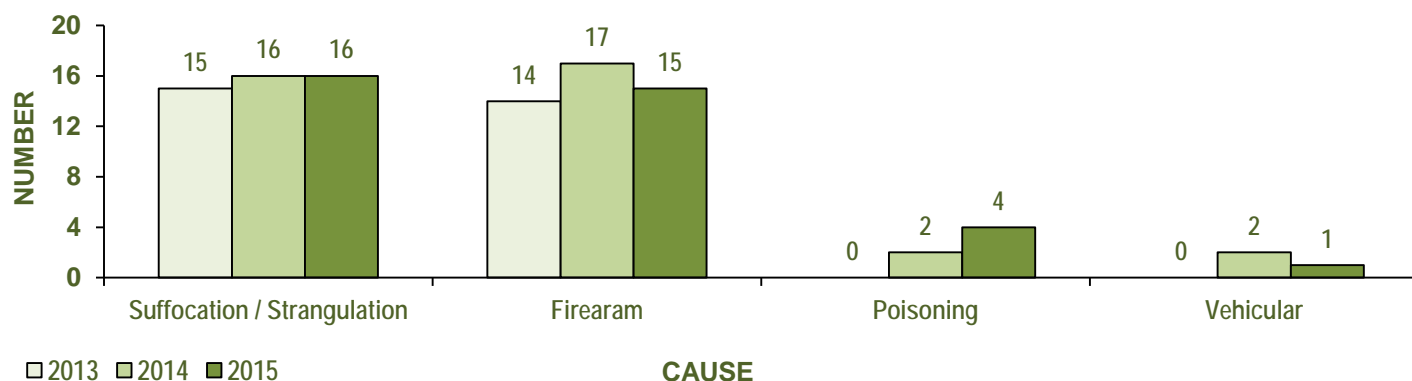
### SUICIDES BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	8	9	8	White	24	30	33
Male	21	28	28	Black	5	7	2
				American Indian	0	0	1
	29	37	36		29	37	36

Suffocation/strangulation and firearms are the most common mechanism of suicide among Missouri children.

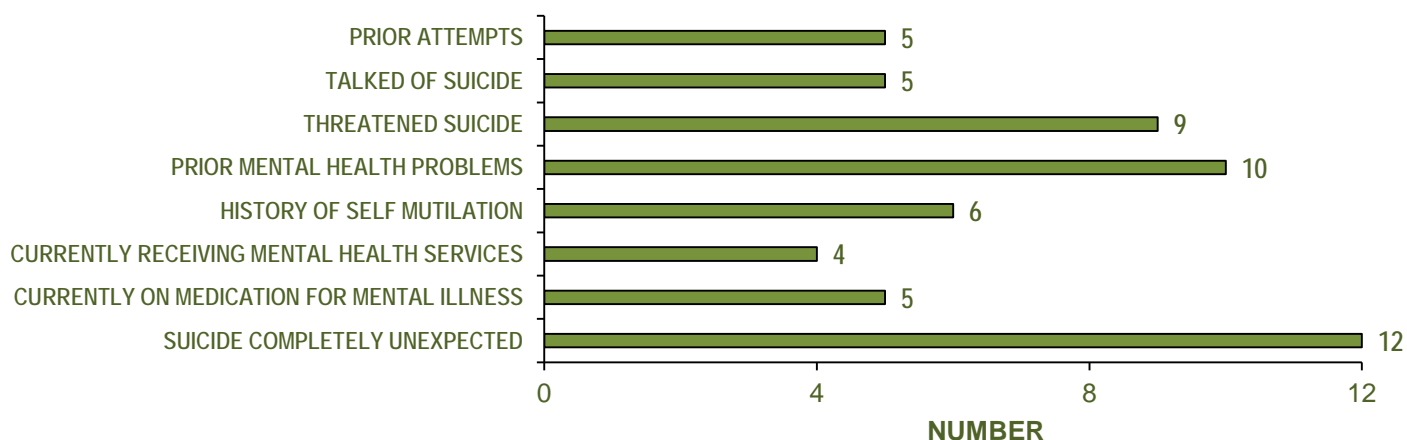


### SUICIDES BY MECHANISM



Suicide is rarely a spontaneous decision and most people give warning signs that they are contemplating taking their own lives. Of the **36** Missouri children who committed suicide in 2015, **24** (67%) had displayed one or more warning signs.

### WARNING SIGNS OF SUICIDE



While suicide is rarely spontaneous, many times it is brought about due to a personal crisis. **Twenty-three** of the children who committed suicide in 2015, had recent history of one or more personal crises.

### RECENT HISTORY OF PERSONAL CRISES

Argument with Parent/Caregivers	5	Sexual Orientation	1
Family Discord	5	Parents' Divorce/Separation	1
Break up with Boyfriend/Girlfriend	1	School Failure	2
Argument with Boyfriend/Girlfriend	5	Bullying as a Victim	4
Drug or Alcohol Use	1	Rape/Sexual Abuse	1
Problems with the Law	1	Other	8

## Risk and Protective Factors For Youth Suicide:

Suicide is a reaction to intense feelings of loneliness, worthlessness, hopelessness, or depression. Suicidal behaviors in young people are usually the result of a process that involves multiple social, economic, familial and individual risk factors, with mental health problems playing an important part in its development. The Missouri Suicide Prevention Plan tells us that understanding the interactive relationship between risk and protective factors in suicidal behavior continues to be studied and drives the development of interventions. Risk factors are a combination of stressful events, situations, and/or conditions that may increase the likelihood of suicide, especially when several coincide at any given time. Risk factors for suicide include, but are not limited to:

### Biopsychosocial Risk Factors

- ✿ Mental disorders, particularly mood disorders, schizophrenia, anxiety disorders and certain personality disorders
- ✿ Alcohol and other substance use disorders
- ✿ Hopelessness
- ✿ Impulsive and/or aggressive tendencies
- ✿ History of trauma or abuse (bullying, violence and assault)
- ✿ Some major physical illnesses
- ✿ Previous suicide attempt
- ✿ Family history of suicide

### Environmental Risk Factors

- ✿ Academic, job or financial loss
- ✿ Relational or social loss (divorce, incarceration, legal problems)
- ✿ Easy access to lethal means
- ✿ Local clusters of suicide that have a contagious influence

### Sociocultural Risk Factors

- ✿ Lack of social support and sense of isolation
- ✿ Stigma associated with help-seeking behavior
- ✿ Barriers to accessing health care, especially mental health and substance abuse treatment
- ✿ Certain cultural and religious beliefs (for instance, the belief that suicide is a noble resolution of a personal dilemma)
- ✿ Exposure to suicidal behavior of others, including through media coverage and influence of others who have died by suicide

Protective factors make it less likely that individuals will develop suicidal ideations, and may encompass biological, psychological or social factors in the individual, family and environment.

### Protective Factors:

- ✿ Effective clinical care for mental, physical and substance use disorders
- ✿ Easy access to a variety of clinical interventions and support for help-seeking
- ✿ Restricted access to highly lethal means of suicide
- ✿ Strong connections to family and community support
- ✿ Support through ongoing medical and mental health care relationships
- ✿ Skills in problem solving, conflict resolution and nonviolent handling of disputes
- ✿ Cultural and religious beliefs that discourage suicide and support self-preservation

## The Missouri Suicide Prevention Plan:

*The Missouri Suicide Prevention Plan – A Collaborative Effort – Bringing a National Dialogue to the State, Revised 2012*, includes research, data-specific strategies for reducing suicide and suicidal behaviors, and links to suicide prevention resources. The state plan is available online at the Missouri Department of Mental Health website: <http://dmh.mo.gov/docs/mentalillness/suicideplan.pdf>. The writers point out that suicide is a large, complex problem. Missouri's communities are too diverse in their members and needs for a single intervention to be adequate. Thus, a diverse array of interventions will be required to meet the particular local needs of the many unique communities in Missouri. Collaboration is essential if the activities outlined in this section are to be effective.

## Prevention Recommendations:

### For parents:

- ✿ Maintain open lines of communication with a willingness to listen, understand and discuss your children's concerns.
- ✿ Seek early treatment for children with behavioral problems, possible mental disorders (particularly depression and impulse-control disorders) and substance abuse problems.
- ✿ Limit young people's access to lethal means of suicide, particularly firearms.

### For community leaders and policy makers:

- ✿ Encourage health insurance plans to cover mental health and substance abuse on the level physical illnesses are covered.
- ✿ Support and implement school and community prevention programs designed to address suicide and suicidal behavior as part of a broader focus on mental health and coping skills, in response to stress, substance abuse and aggressive behaviors.
- ✿ Enact and enforce laws and policies that limit young people's access to firearms and encourage responsible firearm ownership.

### For professionals:

- ✿ Children who have attempted suicide or displayed other warning signs should receive aggressive treatment attention.
- ✿ Maintain contact information for local mental health resources.

### For child fatality review panels:

- ✿ Support or facilitate evidence-based suicide prevention programs in your community.
- ✿ In reviewing a possible suicide, carefully consider the warning signs and history of the victim. Consider also points of early intervention that can be enhanced in your community to prevent other suicides and suicidal behaviors.

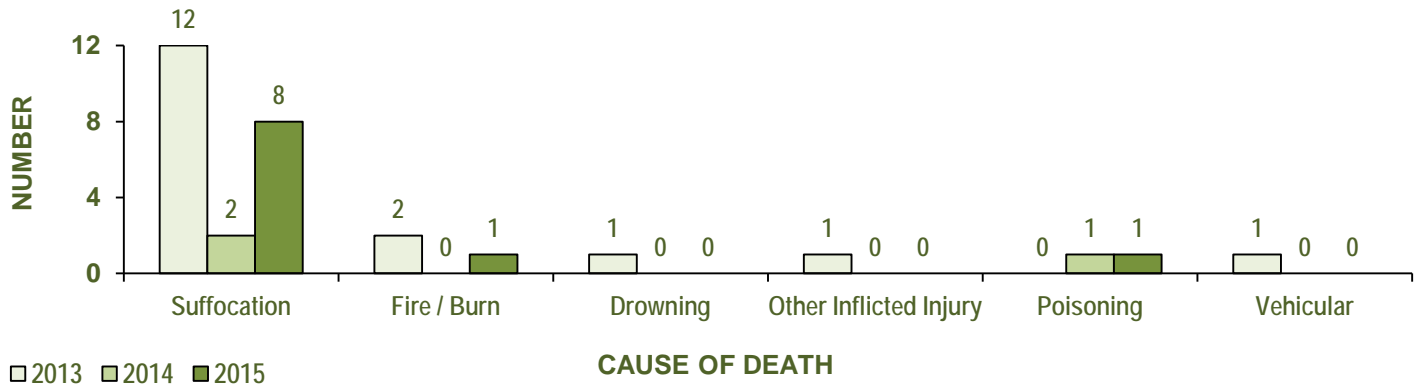
## UNDETERMINED INJURY

**In 2015, 10 Missouri children died of injuries whose manner could not be determined.**

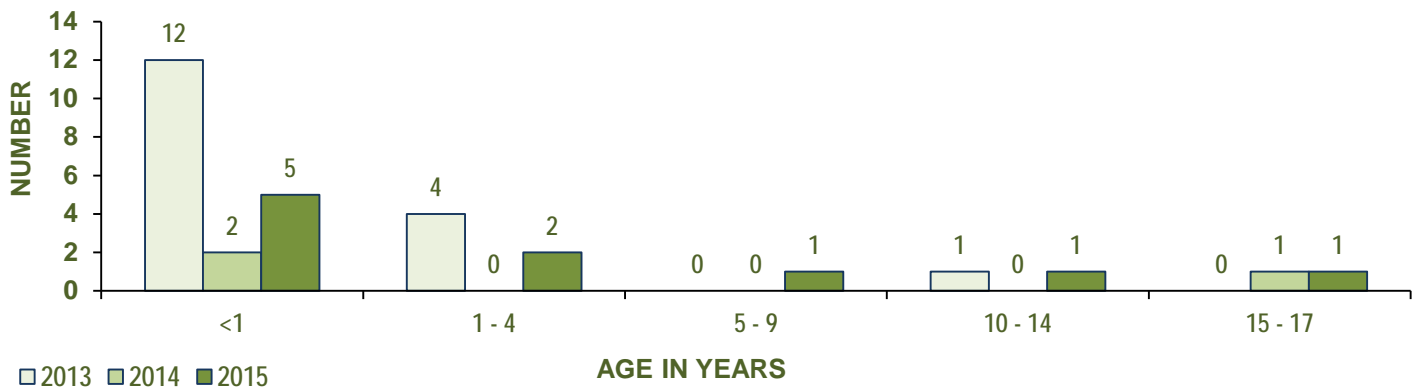
When a child dies, the cause of death is often evident, but the actual intent might not be readily determined. For example, when a teenager dies from suffocation, poisoning, pedestrian injury or vehicle crash, the difference between the event being intentional or unintentional is sometimes impossible to determine. Or as another example, an apparent fire death can either have resulted from faulty wiring in a residence or by arson to cover up a homicide.

One of the main objectives of the child fatality review process is to assist those making this determination of how and why a child died, by providing a process that allows for a more thorough investigative, social and medical review of all known information surrounding the circumstances of death. Even after a thorough investigation and review, there are still some deaths where there is not enough information and/or evidence to prove either way that the death was intentional or unintentional. There were **10** injury deaths of undetermined manner.

### UNDETERMINED INJURY FATALITIES BY CAUSE



### UNDETERMINED INJURY FATALITIES BY AGE



### UNDETERMINED INJURY FATALITIES BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	3	1	4	White	15	2	8
Male	14	2	6	Black	1	1	2
				Multi-Racial	1	0	0
	17	3	10		17	3	10

## UNDETERMINED CAUSE AND MANNER

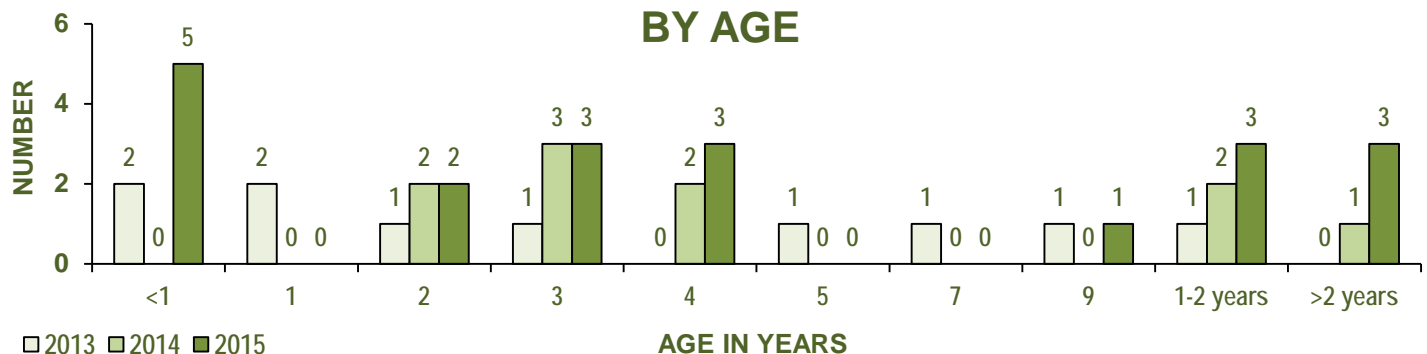
In 2015, there were 20 Missouri children whose cause and manner of death could not be determined.

The cause and manner of death in **20** children could not be determined. **One** of these was a teen 17 years old, **two** were between 10-14 years old, **three** were between one to four years old and the remaining **14** were infants under the age one year of age. The CDC calls this category “Ill Defined and Unknown Cause of Mortality,” and, in the case of infants, defines it as “The sudden death of an infant less than one year of age that cannot be explained as a thorough investigation was not conducted and cause of death could not be determined.”

### The differences between Undetermined and SIDS Deaths are as follows:

- ✱ Sudden Unexpected Infant/Child Death (SUID/SUCD) covers deaths which were caused by many factors, SIDS and Undetermined are just two, others include poisoning or overdose, cardiac channelopathies, inborn errors of metabolism, infections and accidental suffocations.
- ✱ Both the manner and cause of the death listed under Undetermined are unknown – in SIDS the manner is classified as Natural.
- ✱ Like SIDS, in an Undetermined death there was nothing found at autopsy to indicate exactly why the child died. Unlike SIDS, in Undetermined deaths there were increased risk factors present, such as a recent illness, unsafe sleep surfaces or same surface sleep sharing; i.e. beds, couch, and chair, which can be neither proven nor disproven to have caused the death. Or, there was a lack of a thorough investigation having been conducted.

### UNDETERMINED CAUSE AND MANNER FATALITIES BY AGE



### UNDETERMINED CAUSE AND MANNER BY SEX AND RACE

SEX	2013	2014	2015	RACE	2013	2014	2015
Female	5	6	11	White	6	7	13
Male	5	4	9	Black	3	3	6
				Asian	0	0	1
				Multi-Racial	1	0	0
	10	10	20		10	10	20

## THE PRACTICAL APPLICATION OF CHILD FATALITY REVIEW: PREVENTION OF CHILD FATALITIES

The death of a child is a sentinel event that captures the attention of the public and creates a sense of urgency that deserves a well-planned and coordinated prevention response. Generally, successful prevention initiatives are realistic in scope and approach, clear and simple in their message, and based on evidence that they work.

State and local CFRP panels are remarkably dedicated and enthusiastic in initiating timely prevention activities that serve to raise awareness, educate parents and caretakers, influence public policy and involve the community in prevention initiatives.

At the state and national level, the sum of collected data is used to identify trends and patterns that require systemic solutions. Researchers in St. Louis, Kansas City and Columbia, among others, as well as statewide prevention organizations, utilize Missouri CFRP de-identified data to gain new insights; i.e., research into sudden unexpected infant deaths, concluded that certain unsafe sleep arrangements occurred in the large majority of cases of sudden unexpected infant deaths diagnosed as SIDS, unintentional suffocation and cause undetermined. Research also demonstrates what CFRP panel members had suspected: infant deaths caused by unsafe sleep conditions were preventable. In Missouri and most other states, safe sleep campaigns, developed and implemented by a variety of public and private entities, include parent education and provide a safe crib to families in need. The Consumer Product Safety Commission and the American Academy of Pediatrics have also revised their safe sleep recommendations and product safety guidelines to reflect this knowledge gained.

### Basic Principles

It is widely accepted among professionals in the field of injury prevention that the public health tools and methods used effectively against infectious and other diseases, and occupational hazards can also be applied to injury prevention. As a result, attention is given to the environment and to products used by the public, as well as individual behavior. An epidemiologic approach to child fatalities and near-fatalities offers tools that can effectively organize prevention interventions and draws on expertise in surveillance, data analysis, research, public education and intervention. There are four steps that are interrelated:

- ✿ **An ongoing surveillance of child fatalities provides comparable data, documentation and monitoring over time. (What's the problem?)** The national-level, standardized case reporting tool and Internet-based data collection system is improving and protecting the lives of children and adolescents on both the state and national level. The collection of uniform data allows the opportunity for researchers to identify valuable state and national trends, risks, spikes and patterns.
- ✿ **Risk factor research identifies or confirms what is known about risk and protective factors that may have relevance for public policies and prevention programs. (What is the cause?)** In western New York, a hospital-based program was developed to educate all new parents about the dangers of shaking an infant, now known as abusive head trauma. This initiative effectively reduced the incidence of abusive head trauma in that region, since it was implemented. This program has been replicated throughout the country and proven equally successful. Several states have also passed legislation requiring this program for child care providers. In this way, prevention of abusive head trauma is being integrated in state and community systems that provide services and support to children and families.

- ✿ Identification of evidence-based strategies that have proven effective or have high potential to be effective. (What works?) Assessing effectiveness of a prevention strategy as it is implemented is difficult; however, the benefits in terms of funding and long-term cost are obvious. The Safe Sleep Initiative was based on research into sudden, unexpected infant deaths. University-based research groups, such as Harborview Injury Prevention and Research Center and the Childhood Injury Research Group at the University of Missouri provided evaluations of various injury prevention strategies. National organizations and governmental agencies, such as SAFE KIDS Worldwide, and the National Center for Injury Prevention at the CDC and the American Academy of Pediatrics provide research and prevention information.
- ✿ Implementation of strategies where they currently do not exist. (How do you do it?) Outcomes for prevention initiatives are generally functions of structure and duration. Prevention initiatives that are integrated into communities as state systems are sustainable and effective in the long term; i.e., child passenger restraint laws for motor vehicles and helmets for children riding bicycles. In many areas, schools include safety education for children and health care providers, who are in a unique position to assist in the prevention of child maltreatment and actively promote health and safety for children. Many state and local entities responsible for licensing child care providers are mandating education on safe sleep for infants and toddlers, and prevention of child abuse, including abusive head trauma as part of their curricula.

## PREVENTION FINDINGS: THE FINAL REPORT

*The difference between a fatal and nonfatal event is often only a few feet, a few inches, or a few seconds. In the past, most people believed that serious and fatal injuries were random or unavoidable events, or simply the result of individual carelessness. Fortunately, the science of injury prevention has moved away from this fatalistic approach to one that focuses on the environment and products used by the public, as well as individual behavior. As a result, unintentional injury-related death rates among children in the United States have declined dramatically over the last two decades. Injuries are now widely recognized as understandable, predictable and preventable.*

A preventable child death is defined as one in which awareness or education by an individual or the community may have changed the circumstances that lead to the death. Legislation passed in 2000 now requires CFRP panels to complete a Final Report, summarizing their findings in terms of circumstances, prevention messages and community-based prevention initiatives. Additionally, the NCRPCD Internet-based Case Reporting System also collects information on prevention responses.

The death of a child is a sentinel event that captures the attention of the community, creates a sense of urgency and a window of opportunity to respond to the questions, “What can we do?” County-based prevention activities serve to raise awareness, educate parents and caretakers, influence public policy and involve the community in prevention initiatives that protect and improve the lives of children. The initiatives highlighted below demonstrate how a few volunteer professionals are working together to measurably reduce or eliminate threats to the lives and wellbeing of countless Missouri children.



### **Media Campaign:**

- ✿ A five-year-old child was swimming with family at a lake when the mother became distracted by another child. The mother looked back and found that the victim had gone underwater. Child was later found in the middle of the lake. The county panel arranged for commercials and reminders about water safety to be run in the local media.
- ✿ An infant was sleeping with mother's paramour under a heavy quilt. The cause of death was accidental smothering. Educational activities in the media, for parents and other child care providers concerning safe sleep for infants.

### **Legislation, Law or Ordinance:**

- ✿ Four children died in a house fire. The home was a rental and had no smoke detectors. The community changed their local ordinances to require smoke detectors in all rental properties.

### **Community Safety Project:**

- ✿ A seven-year-old child died in a house fire. There were no smoke detectors in the home. In response, the community fire department went door-to-door talking to the residence about fire safety and installing smoke detectors.

### **Educational Activities in Schools:**

- ✿ A teen was riding with other teens in a vehicle being driven by an older male friend. The driver failed to stop at a stop sign and was hit by another vehicle. The local school had a presentation on the importance of seat belt use, and responsibilities, decisions and consequences associated with driving safety.

### **Changes In Agency Practices:**

- ✿ A teen driver failed to stop at a stop sign, entered the highway and was struck by another vehicle. A recommendation was made to the highway department to install rumble strips before coming to stop sign and also possible lights on the stop sign for better visibility.

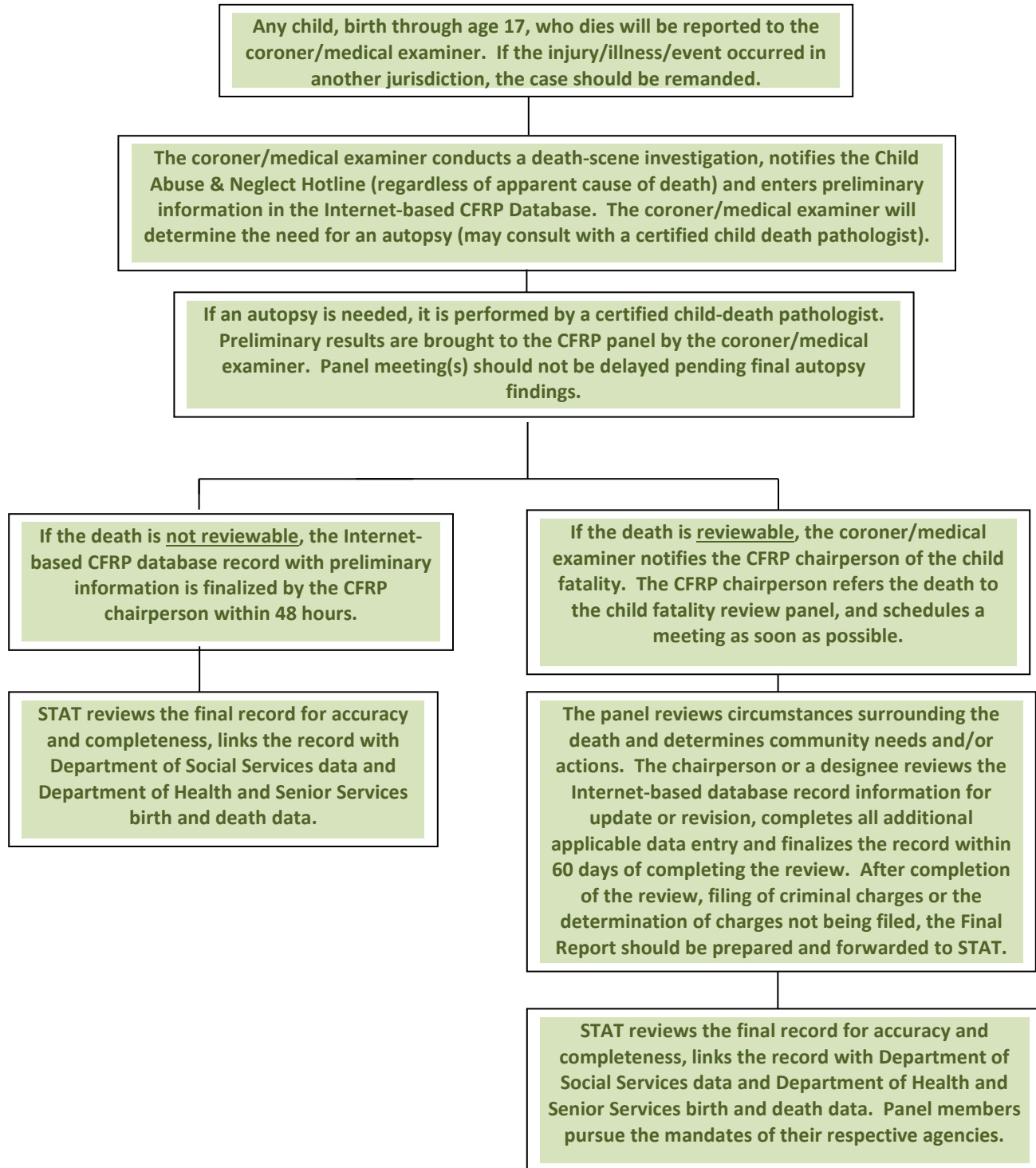
### **Education – Parent Education:**

- ✿ Mother, father, infant and another child were sleeping in the same bed. The parents woke in the morning to find the infant unresponsive. The panel worked with local media, health department and doctor's offices to get out the safe sleep message to parents and other caregivers.

## **Partnerships**

Just as there are multiple disciplines involved in a local child fatality review, the state-level CFRP works with national, state and local agencies, and prevention partnership groups such as the National Center for the Review and Prevention of Child Death (NCRPCD), Missouri Children's Trust Fund (CTF), Missouri Department of Health and Senior Services (DHSS), Missouri Department of Mental Health (DMH), Missouri Prevention Partners (MPP) and Missouri Injury and Violence Prevention Advisory Committee (MIVPAC) to address identified risks of child injuries and fatalities statewide by coordinating efforts to provide prevention education and distribute prevention resources.

## PROCESS FOR CHILD FATALITY REVIEWS



**NOTE:** Major metropolitan area CFRP panels are supported by Metro Case Coordinators, who coordinate exchange of information between panel members who meet on regularly scheduled monthly meetings, so those panels do not need to follow the above-listed time constraints.

## MISSOURI INCIDENT CHILD FATALITIES (AGE LESS THAN 18) BY AGE, SEX AND RACE 2013-2015

Age	All Deaths			Reviewed Deaths			Injury Deaths		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
0	542	518	559	131	155	153	87	96	88
1	35	33	36	21	23	24	11	18	17
2	21	29	27	18	22	19	12	14	15
3	14	12	20	7	8	10	5	6	10
4	17	10	11	10	5	6	7	6	7
5	11	9	17	7	6	13	4	3	11
6	12	12	14	5	6	11	5	5	8
7	10	9	8	6	3	5	3	3	3
8	9	10	10	8	5	6	6	3	5
9	18	10	12	8	7	6	7	3	4
10	6	9	9	5	6	3	2	4	3
11	9	13	16	7	8	5	4	8	4
12	22	14	9	10	11	5	8	6	4
13	12	12	18	6	8	9	6	6	11
14	17	14	24	14	9	13	11	9	12
15	31	33	19	24	28	16	21	26	16
16	37	39	31	27	32	23	27	28	26
17	47	51	67	35	43	57	36	47	56
<b>TOTAL</b>	<b>870</b>	<b>837</b>	<b>907</b>	<b>349</b>	<b>385</b>	<b>384</b>	<b>262</b>	<b>291</b>	<b>300</b>

Sex	All Deaths			Reviewed Deaths			Injury Deaths		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
Female	364	341	367	136	134	142	94	91	107
Male	506	496	540	213	251	242	168	200	193
<b>TOTAL</b>	<b>870</b>	<b>837</b>	<b>907</b>	<b>349</b>	<b>385</b>	<b>284</b>	<b>262</b>	<b>291</b>	<b>300</b>

Race	All Deaths			Reviewed Deaths			Injury Deaths		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
White	600	583	625	242	265	262	182	203	215
Black	232	230	237	91	109	105	69	79	72
Hawaiian	1	0	0	1	0	0	1	0	0
Pacific Islander	0	0	1	0	0	0	0	0	1
American Indian	0	1	1	0	1	0	0	1	0
Asian	12	5	15	2	1	5	1	1	3
Multi-Racial	25	18	28	13	9	12	9	7	9
<b>TOTAL</b>	<b>870</b>	<b>837</b>	<b>907</b>	<b>346</b>	<b>385</b>	<b>384</b>	<b>262</b>	<b>291</b>	<b>300</b>

## MISSOURI INCIDENT CHILD FATALITIES (AGE LESS THAN 18) BY COUNTY 2013-2015

County of Event	All Deaths			Reviewed Deaths			Injury Deaths		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
Adair	1	0	4	0	0	0	0	0	0
Andrew	1	2	0	1	2	0	1	2	0
Atchison	0	0	0	0	0	0	0	0	0
Audrain	6	2	2	1	2	2	1	1	1
Barry	5	5	0	4	2	0	2	2	0
Barton	3	3	0	1	3	0	1	2	0
Bates	1	1	0	1	0	0	0	0	0
Benton	2	1	3	0	1	2	0	1	2
Bollinger	2	3	1	1	2	1	0	0	1
Boone	27	29	35	7	11	8	4	7	5
Buchanan	10	16	8	6	8	7	3	5	4
Butler	4	6	13	2	4	8	2	3	5
Caldwell	2	2	0	1	2	0	1	1	0
Callaway	5	6	7	4	3	5	2	3	4
Camden	2	8	6	2	5	6	1	4	6
Cape Girardeau	11	9	8	7	5	5	4	3	0
Carroll	0	2	0	0	1	0	0	2	0
Carter	3	1	0	0	1	0	0	1	0
Cass	15	7	8	11	5	8	10	3	3
Cedar	1	0	3	1	0	2	0	0	0
Chariton	2	0	1	1	0	1	0	0	1
Christian	8	6	8	4	3	5	4	3	5
Clark	0	0	0	0	0	0	0	0	0
Clay	22	20	22	10	11	14	6	8	9
Clinton	0	0	1	0	0	1	0	0	1
Cole	6	5	4	3	3	1	2	2	0
Cooper	3	1	4	2	0	2	2	0	2
Crawford	3	3	3	2	1	3	1	0	1
Dade	1	0	2	1	0	1	1	0	1
Dallas	3	3	3	2	3	3	2	2	3
Davies	2	2	4	1	0	3	1	0	3
DeKalb	1	2	1	1	1	0	0	0	0
Dent	2	2	4	2	2	2	1	2	3
Douglas	1	0	3	1	0	3	1	0	2
Dunklin	2	7	5	2	4	2	1	4	2
Franklin	11	11	10	7	7	6	6	5	6
Gasconade	2	1	1	2	1	1	2	1	1
Gentry	0	1	1	0	0	0	0	0	0
Greene	55	40	66	20	15	16	12	10	11
Grundy	2	1	6	0	1	5	0	0	4
Harrison	0	0	1	0	0	1	0	0	1
Henry	1	4	4	1	2	4	1	2	2

## MISSOURI INCIDENT CHILD FATALITIES (AGE LESS THAN 18) BY COUNTY 2013-2015

County of Event	All Deaths			Reviewed Deaths			Injury Deaths		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
Hickory	1	0	1	1	0	1	1	0	1
Holt	1	0	0	1	0	0	0	0	0
Howard	0	1	1	0	0	1	0	0	1
Howell	6	10	4	2	4	2	3	4	2
Iron	0	4	2	0	4	2	0	1	2
Jackson	126	139	166	44	67	58	27	40	38
Jasper	16	5	8	8	2	3	6	2	5
Jefferson	12	13	16	9	9	11	7	7	8
Johnson	3	5	3	0	3	1	1	2	0
Knox	2	1	0	2	1	0	1	1	0
Laclede	11	8	4	7	6	3	5	6	0
Lafayette	2	4	6	1	3	5	1	3	5
Lawrence	6	4	2	3	3	0	2	3	0
Lewis	0	0	1	0	0	0	0	0	0
Lincoln	6	6	3	4	5	3	3	3	2
Linn	0	3	2	0	0	2	0	1	1
Livingston	0	1	2	0	1	1	0	0	1
McDonald	5	7	4	1	2	0	2	4	4
Macon	1	0	1	1	0	1	1	0	0
Madison	2	1	1	0	1	0	0	1	0
Maries	2	1	0	1	1	0	1	1	0
Marion	3	1	2	0	0	0	0	0	0
Mercer	0	0	0	0	0	0	0	0	0
Miller	4	1	1	4	0	0	3	0	0
Mississippi	1	1	3	1	1	1	1	0	0
Moniteau	0	0	0	0	0	0	0	0	0
Monroe	0	1	1	0	0	1	0	0	1
Montgomery	2	0	2	2	0	1	2	0	1
Morgan	2	3	3	1	2	3	1	1	1
New Madrid	2	4	1	2	1	1	1	1	1
Newton	14	16	10	5	6	4	5	5	4
Nodaway	0	4	1	0	2	1	0	3	1
Oregon	2	0	4	2	0	1	2	0	4
Osage	0	0	0	0	0	0	0	0	0
Ozark	0	1	1	0	1	0	0	1	1
Pemiscot	8	3	5	4	2	4	4	2	4
Perry	1	2	0	1	0	0	0	1	0
Pettis	5	5	2	1	5	1	2	4	1
Phelps	4	7	7	3	3	3	3	2	1
Pike	4	3	2	3	2	2	3	0	2
Platte	9	2	5	3	0	4	2	0	4
Polk	1	6	8	1	2	2	0	2	4

## MISSOURI INCIDENT CHILD FATALITIES (AGE LESS THAN 18) BY COUNTY 2013-2015

County of Event	All Deaths			Reviewed Deaths			Injury Deaths		
	2013	2014	2015	2013	2014	2015	2013	2014	2015
Pulaski	9	7	1	7	7	0	6	4	0
Putnam	0	0	0	0	0	0	0	0	0
Ralls	2	1	1	2	1	1	2	1	1
Randolph	3	3	4	2	2	3	3	2	3
Ray	3	2	0	2	1	0	2	1	0
Reynolds	3	1	1	3	1	1	3	1	1
Ripley	1	3	4	0	1	4	0	1	4
St. Charles	12	24	17	9	8	11	4	7	9
St. Clair	0	0	3	0	0	0	0	0	2
St. Francois	10	12	8	5	10	7	2	9	5
St. Louis County	134	140	140	30	35	49	25	30	42
Ste. Genevieve	2	1	0	2	1	0	2	1	0
Saline	2	2	1	1	1	1	1	0	1
Schuyler	2	0	0	2	0	0	2	0	0
Scotland	0	0	1	0	0	1	0	0	1
Scott	7	10	4	2	6	2	1	5	1
Shannon	0	1	1	0	1	0	0	1	1
Shelby	2	1	0	1	1	0	1	1	0
Stoddard	0	1	2	0	1	1	0	1	0
Stone	0	1	3	0	1	3	0	1	1
Sullivan	0	1	0	0	1	0	0	1	0
Taney	2	8	2	2	7	2	2	5	2
Texas	4	4	6	3	4	6	2	4	4
Vernon	6	3	4	2	3	2	2	2	2
Warren	4	5	3	4	2	3	4	3	3
Washington	5	0	1	5	0	1	5	0	1
Wayne	1	1	1	0	1	1	0	1	1
Webster	11	4	6	5	2	3	4	2	3
Worth	0	1	0	0	1	0	0	0	0
Wright	3	2	2	3	2	0	2	0	0
St. Louis City	150	113	154	27	34	31	22	27	23
STATE TOTAL	870	837	907	349	385	384	262	291	300